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Delivered at St. Bartholomew's Hospital on June 2nd and June 4th

BY HUGH CABOT, C.M.G., M.D., LL.D.,
PROFESSOR OF SURGERY, UNIVERSITY OF MICHIGAN.

PART I.

CORTICAL INFECTION.

I WANT to essay the difficult task of unravelling the complicated classification of non-tuberculous infections of the kidney. I am excluding tuberculosis because it behaves differently, and may be regarded as a separate type of infection.

In considering this non-tuberculous group it is wise to exclude the adventitious causes of infection, and start with the proposition that the kidney was normal up to the time that the accident occurred. This makes it unnecessary to consider infections which depend on extraneous causes, such as stone in the kidney or obstruction of the ureter or in the lower urinary tract.

Dealing with a group in which the kidney is deemed to have been normal before it became infected, we can divide the infections into two distinct types, recognising that they overlap and that mixtures may occur. Until recent times it has been the custom to group cases according to the infecting organism, but the more I see of them the more doubtful I am that that is a sound classification. We can group them instead according to the pathological findings, and point out that certain types of infecting organisms are most likely to produce particular lesions; on this plan they may be divided into cases which have a cortical lesion, and those in which the pelvis of the kidney is chiefly affected. To-day I shall devote my main attention to the cortical type—those infections caused by pus-producing organisms, the staphylococci and streptococci. Most commonly *Staphylococcus aureus* is responsible; less commonly *Staphylococcus albus* and *Staphylococcus citreus* more rarely still.

Incidence is less important in this group than in the subsequent group, and there is no very important distinction between the sexes in regard to the frequency of this infection. My experience has led me to believe that it is relatively uncommon in childhood, though why this is so I am not clear. It is ordinarily seen in adult life, rarely in late adult life.

There is wide agreement that in this type the infection is practically always blood-borne. It is a hæmatogenous infection, which has been regarded—erroneously, I think—as the only common type of hæmatogenous infection. It is commonly associated with lesions on the surface of the body, usually of the carbuncle form; but also, more frequently than we suspect, with sore-throat—staphylococcic rather than streptococcic. It may also be associated with acute osteomyelitis. This is a rarer but not perhaps so uncommon as we imagine; the lesion is not severe, and it may be masked by other symptoms. It is generally possible to demonstrate some lesion to which the kidney trouble is secondary. The superficial lesion may have nearly, or even completely, healed before the kidney process has so developed as to be evident. Hence the need for going carefully into the history.

PATHOLOGICAL FINDINGS.

The characteristic lesion here is the subcortical abscess, which sometimes pushes up the capsule of the kidney so as to make itself quite evident. In the milder cases it is probable that there are only a few of these lesions. I say "probable" because the lesions are very rarely seen, either at operation or at post-mortem. The more developed of the cases show the cortex of the kidney studded with small yellowish dots, and on section these areas will be found extending down into the organ for a considerable distance, though chiefly confined to the cortical zone. In the most severe stage there is a massive breaking down of the kidney, a lesion which, 20 years ago, was described as carbuncle of the kidney, partly because in some ways it resembles carbuncle, and partly because it was thought to be almost universally associated with a carbuncle of the skin. These infections may overwhelm the kidney, so that in 48 hours, or even less, there is practically complete necrosis. I remember two or three cases with this type of lesion in which, on the attempt being made to remove the kidney, the organ practically came away in the hand; it was wholly necrotic, and there was complete thrombosis of the blood-supply. Lesions occur which are typically wedge-shaped, and these have been regarded as embolic in origin, it being assumed that they are due to the plugging of a large terminal vessel with a septic embolus. I do not know that such an assumption is necessary, because with a relatively localised lesion in the neighbourhood of the cortex the process will extend so as to produce, at a later date, thrombosis of main vessels secondary to the earlier lesion.

The clearly-cut types are generally fairly evident clinically, and it is therefore more important for us to consider the milder cases, in which the diagnosis may be in doubt owing to insufficient evidence. There may be only a relatively small number of abscesses in the kidney, but although most of them resolve naturally, they are the common precursor of true perinephritic abscess. I say "true" because I want to localise my field. In literature the conditions described as perinephritic abscess are generally subdivided into those in which the abscess is secondary to such conditions as stone or tuberculous pyonephrosis, and a group which should not be called perinephritic as they are simply lumbar abscesses, often due to an infection of bone. This group is not the one to which I want to call your attention to-day, because these cases are properly regarded as secondary to some other lesion, the other lesion being the real one which should attract our attention and treatment.

The type of infection of most importance is that in which the onset is insidious, which develops slowly, and in which the diagnosis may be obscure for a long time. I believe these cases are directly traceable to infections of the kidney by pus-producing organisms, in which the lesion affects the kidney lightly and in which the kidney is able to look after itself. One or more of the lesions breaks through the true capsule and gets into the perinephric fat, where it can develop without causing symptoms. If in such cases the patient is seen relatively early in the disease, there can be found, in otherwise normal urine, staphylococci, (commonly *Staphylococcus aureus*), in numbers which transcend the possibility of simple contamination. These staphylococci are present only for a relatively short time.

SIGNS AND SYMPTOMS.

Clinically we may divide this type of infection into acute, subacute, and what I would call the chronic except that I prefer to call it the perinephritic type, which is so mild that if it causes any lesion at all it produces it in the perinephritic space. To the acute might be added a per-acute group, in which there is an overwhelming infection, coming on suddenly, and in which the clinical picture is often that of an abdominal infection. Practically all the cases of this that I have seen have been regarded as cases of acute abdominal emergency, and the idea has often been that there was an acute hæmorrhagic pancreatitis. The onset is sudden and the effect on the patient very severe; there is a rapid, weak pulse, and a high temperature, and the condition borders on collapse. In some of the cases the lesion is confined to one kidney, and its removal, even if the patient is in extremis, will result in a recovery which is prompt and complete. But it is an unusual condition: one might go for years without seeing it, even in a large

and varied practice. The lesion I classify as subacute is, perhaps, the one more commonly classified as acute and is the most commonly seen. It will occur, not rarely, in the course of a peripheral infection by staphylococcus, with symptoms of pain and tenderness, referred—generally accurately—to the region of the kidney, and with fever, sometimes maintained or sometimes intermittent. The outstanding clinical findings are an enlargement of the kidney, generally perfectly evident and therefore probably considerable, which is also tender. The sign which should lead to a correct diagnosis is that, with every evidence of infection of the kidney, the urine is still normal so far as its appearance is concerned, and rarely shows any abnormality except very small quantities of albumin, an occasional red blood cell, and in the early stage, many staphylococci. These are best obtained by centrifuge and smear rather than by culture, though both methods should be employed, because I suspect that many organisms which one can demonstrate in smear have been so damaged that they do not grow satisfactorily.

The remaining group of cases is one to which I want especially to call attention because we all seem to have been overlooking them. Since we began to recognise them a few years ago, the number of instances I have seen has increased rapidly. Many of these patients have acute infections of the upper respiratory tract: sometimes we see them after ear complications, but most frequently after nasopharyngeal and tonsillar lesions. The patient, in a week or ten days, perhaps when becoming convalescent, will complain of a little pain in the back, and may complain that the window was open too much last night, attributing the pain to that.

On bimanual palpation of the flank definite tenderness is found, almost always confined to one side, and this will generally increase for three or four days. There will be moderate fever and the urine will contain cocci, but (in our experience of 30 cases) nothing else, not even traces of albumin. At the end of four or six days it is clear that the tenderness is diminishing, and at the end of ten days it has disappeared. In such cases I think there is sufficient evidence to make a diagnosis of this mild type of infection of the kidney, particularly when it is possible to find organisms in the urine. The greatest interest attaches to the cases in which the temperature, having come down to normal or nearly so, begins to rise again. It is at this point that we may detect early perinephritic abscess, and I am satisfied that, with the kind of observation we are now capable of giving, we should be able to reach the perinephritic abscess considerably earlier than has been done in the past.

TREATMENT.

The group of cases which will give most trouble, not in diagnosis, but in your view as to treatment, is the group variously classified as acute or subacute. The onset is sudden; there is considerable enlargement of the kidney; there is a notable amount of fever, sometimes maintained, and sometimes otherwise; and the other kidney appears to be sound. Not many years ago we were confidently advised, and most of us believed, that at the point at which the diagnosis could be made of enlargement of the kidney it was our duty to cut down upon the kidney and abolish it—not a difficult operation at that stage. My confidence in the procedure was considerably shaken when I noted that after abolishing the kidney on evidence—satisfactory to me—that the other kidney was sound, I later had to contribute the fellow kidney to the collection of my colleague the pathologist. I suspect that these lesions are more frequently bilateral than we have been believing; that in the earlier stage the removal of the kidney which is obviously diseased throws an extra strain on the kidney which is not obviously diseased but is still the site of cortical abscess, of which we have, and can have, no evidence. A considerable amount of cortical abscess may exist in the kidney, and we can get no evidence of it if it is below the level of enlargement and tenderness. To say, therefore, that a kidney shows no evidence of a lesion is not to say that it is sound. I think that if treatment is delayed until it is clear that, unless something is done, the resistance of the patient will be insufficient to result in survival, it is more likely that the other kidney will have had an opportunity to deal with its relatively mild infection; and this delay, I think, gives better results.

You may ask: At what point do you decide to go ahead? This comes into the realm of what is known as surgical judgment. The patient does not seem to be losing much ground; his general condition is watched to see whether there is increasing anæmia, and so on. There comes a point when the patient's resistance is beginning to suffer; when the operation, though it is not a great one, must be done at once if it is to be done at all. Generally this point is reached later than most of us think, and I have been surprised how well these patients carry on, with all their symptoms, for a month or six weeks. At the end of that time, I think, we stand a better chance of success than if we go ahead at earlier stages.

PART II.

PYELONEPHRITIS.

The type of kidney infection which I shall discuss to-day is the so-called pyelitic type, the condition commonly called pyelitis.

It is probably true that, from the point of view of the pathologist, pure pyelitis is an unknown disease—that pyelitis is almost always pyelonephritis. The infection of the kidney probably occurs at the early stages, and largely disappears; it is not a very important lesion, and the chief force of the infection is expended on the renal pelvis. In this type the infecting organism, in three out of four cases, is of the colon-typhoid group. We see less of typhoid fever than formerly, so that the pyelitis of typhoid fever is becoming rather a curiosity, but the other organisms of the group behave in relation to the kidney in very similar fashion. These organisms comprise a very large number of varieties. Many of us have believed—I have believed—that typical pyelitis, so-called, was habitually produced by bacilli of these groups. It is now clear that this is not true, and that other organisms may cause pyelitis. My opinion was much influenced by going over, last December, some three hundred cases in which very careful bacteriological studies of the urine had been made. Organisms of the colon bacillus group were responsible for the condition in 76 per cent. of the cases; in the remainder various cocci were found, including *Staphylococcus aureus*. The staphylococcus commonly causes a suppurative cortical lesion, but there are conditions of varied virulence in which it will behave as do the non-pus-producing organisms of the colon-typhoid group. There are also various streptococci, indistinguishable by us from the streptococci causing suppurative cortical lesions, which will produce typical pyelitis.

Perhaps the reason why the *Staphylococcus aureus* and its allies commonly produce suppurative cortical lesions is that they have been producing lesions elsewhere, at more or less the same time, of a suppurative type. Let us imagine a streptococcus which has been producing not a suppurative lesion but a catarrhal lesion, short of actual pus-production. When it gets into the circulation I think it will behave as do the other organisms which commonly produce chronic catarrhs, notably those of the colon bacillus group. It is somewhat a question of virulence and possibly—I throw this out as a suggestion—a question of the company the coccus has been keeping, where it has been living, and what soil it has been cultivating in the recent past. It is clear, I think, that organisms are modified by the tissues on which they are growing, and perhaps by the combinations of other organisms with which they are associated. It is clear, also, that organisms which normally produce an acute abscess may not do so under unusual conditions. That seems a reasonable explanation of the undoubted fact that

cocci which would ordinarily be expected to produce cortical lesions may fail to do so, and may pass through the kidney to produce lesions in the pelvis, stroking the parenchyma of the kidney only very lightly, if affecting it at all.

The Lesion.

Now, briefly, I want to discuss the lesion. This undoubtedly involves the kidney, but in a transient way. Specimens are seldom available, because even the acute forms of the infection are very rarely fatal and the only specimens are those from patients who die from other causes. Microscopic sections of such kidneys show very few lesions of the parenchyma; there is only what the pathologist would describe as cloudy swelling. The chief lesion is of the mucous membrane of the renal pelvis; and the ureter and the bladder may be involved. The common result is great thickening and infiltration of the submucous connective tissue. This is a lesion which not rarely lasts for a quarter of a century, and produces stiffening of the renal pelvis. Where the lesion is present over a long period, a high grade of destruction of the kidney may result, but the extraordinary thing is how long this disease can go on yet leave the patient with a functionally fair kidney.

INCIDENCE AND ÆTIOLOGY.

It is extraordinary to what an extent this disease, in childhood, affects the female more than the male. It is probably true that there are at least nine or ten cases in the female to one in the male. It is a very uncommon lesion in the male child, and an exceedingly common lesion in the female child. In the adult, there is again a great disproportion between the male and the female, largely due to the tendency of the disease to occur during pregnancy. If this group of cases were ignored the remainder would probably show very little difference in adult life. But as regards sex on the whole, allowing for the number of children and the number of women in whom the disease occurs during pregnancy, the disproportion between the male and female is about one to three.

As to the source of infection, I am perfectly aware that I am on highly controversial ground, and what I say must be taken as an opinion rather than a fact. It has been said to be urogenous in origin, by which is meant the same thing as an ascending infection. It has been assumed that the disease begins with an infection of the bladder and ascends to the renal pelvis. How does bladder infection arise? The advocates of the theory of ascending infection have alleged that the anatomical peculiarities of the female urethra are its source. They would have us believe that bacteria proceed backwards along the urethra and infect the bladder. That view is not supported by the evidence. You can introduce bacteria into the bladder; you can even go further and produce trauma of the bladder, but infection will not occur. And yet we were asked to believe that the infection is produced by the mere passage backward of these organisms to the bladder.

There was a tendency some years ago to fall back upon the lymphatics as a source of transference of infection from the bladder to the kidney, overlooking the fact that there are no lymphatics which proceed directly from bladder to kidney. It seems to me that the advocates of the ascending theory ask us to grant them too much. They ask us to grant premises which are not certainly true, and they do not put forward any method of explaining the gaps in the evidence.

The only other theory which is supportable by evidence is that this infection reaches the kidney through the blood stream. Now we know that the other type of infection, the cortical type caused by the pus-producing cocci, is always hæmatogenous in character. Why should we assume that one type of infection is produced via the blood stream, and the other type in an entirely different fashion?

In the days when the hospitals used to be full of typhoid fever we commonly found the bacillus in the urine, and it was frequently possible to make the diagnosis in this way. The typhoid bacillus and the colon bacillus are much alike, and it is not too much to assume that both these organisms reach the kidney through the circulation. The source is the intestinal tract. In ulcerative colitis one commonly sees the pyelitic type of infection of the kidneys and it is quite certain that the organisms enter the blood from the intestine under conditions below the level of what we can describe as a clinical entity, and that they commonly circulate in the blood without producing symptoms recognisable by the patient.

INFECTIVE FOCI.

With us in America an attempt has been made to relate this type of infection of the kidney to distant foci. As many of you realise, this is the day of foci, and teeth and tonsils fall by the wayside in our attempt to eradicate them. It is true that this type of infection of the kidney is relatively common in children in association with infection of the upper respiratory tract, but the organisms infecting the upper respiratory tract are never the organisms which infect the kidney. It seems to me that while it is an attractive doctrine that foci in one part of the body should produce lesions in another, and while Rosenow has been successful in producing lesions in the kidney by the introduction into animals of organisms obtained from tooth-root foci, these are not the organisms with which we are here concerned. They are cocci, streptococci, and do not produce the type of lesion we are talking about, unless we are prepared to take the view that the colon bacillus does not produce a pyelitis, and that pyelitis is produced by streptococci which are later dispossessed by colon bacilli. I find this a difficult theory to swallow, because the lesion produced by the streptococcus is an absolutely different lesion, and the assumption that the streptococcus produces the lesion and then goes off to other fields and gives over his charge to the colon bacillus seems rather fanciful.

I think we must come to the view that colon bacilli enter the circulation from lesions of the intestine, which do not rise to the dignity of a clinical entity. It may be that such an invasion of the blood by the colon bacillus is much more common than we have been in the habit of believing. I suspect that these organisms circulate in the blood very frequently, and a bit of evidence which leads me to that suspicion is that in a series of little more than a hundred cases of early pregnancy we found the colon bacillus in the urine in over half the cases. That suggests that at a time when pyelitis is notoriously common, the organisms which would be capable of producing it are also not rarely found. It seems reasonable to suppose that in many cases the organisms which enter the blood either die miserably or reach the kidney and are excreted without producing any lesions. Some very capable observers believe that no organisms are excreted by a normal kidney, but it is certain that organisms are found in the urine from kidneys in which we can demonstrate no lesion, and it is arguable that there is no such thing as a perfectly normal kidney. If these organisms reach the kidney relatively frequently, and pass through it without doing damage, why do they ever infect the kidney? This brings up the doctrine of lowered resistance, and I wish to put forward the proposition that the type of lowered resistance which leads to pyelitis is not different from the type of lowered resistance which leads quite certainly to infection of the lower urinary tract.

The typical colon-bacillus cystitis may be produced with regularity in man and animals by obstruction of the bladder followed by sudden emptying. Thus occurs a prepared soil; there is lowered resistance and a condition of the bladder wall peculiarly suited to infection by this particular organism. There is an immense amount of experimental work on that subject, all tending to confirm this view. It does not seem to me unreasonable to assume that a process which will produce infection in the lower urinary

tract will also produce infection in the upper urinary tract. At least in some people who most commonly have this infection, some degree of obstruction of the upper urinary tract is common. It should be remembered that in this disease the urine is a very satisfactory medium for bacterial growth, and it is only necessary to assume that there is in some portion of the upper urinary tract a place where stagnation of urine occurs. Stagnation is much more likely to occur in the female than in the male. Stagnation does occur during pregnancy, and there is accumulating evidence to show that there is abnormality of the right ureter during pregnancy in a considerable number of women. When work along that line can be carried out on a large scale, it may be shown that there is constantly some obstruction in one or both ureters during pregnancy.

Here, then, is a possible method of explaining this type of infection. It is notoriously true that dilatation of the renal pelvis is relatively common in the female. It is further true that in the male the disease is more likely to occur in individuals of the long-bodied type, with the flat renal fossa—people in whom there is liability to visceroptosis.

CLINICAL TYPES.

Of the clinical types one may properly distinguish the acute, the subacute and the chronic pyelonephritis. I use the word pyelonephritis, though recognising that the word pyelitis is in common use and has the dignity of long usage. Amongst children and adults these acute cases are seen with fever, occasionally chills, malaise, and the loss of appetite and other symptoms which go with fever of any sort. There is discomfort referred to the region of the kidney, rarely pain, moderate tenderness of the kidney, and pus in the urine. This is one of the important points of distinction between this type of infection and the cortical type. In the cortical type the lesion has no immediate relation with the excretory passages of the kidney, and consequently pus does not appear in the urine. In the pyelitic type pus appears in the early stage and with it the characteristic organisms of the colon group, readily to be found in the fresh specimen, or in the stained specimen, where they will be seen to be large bacilli. They cannot be classified by staining, but it is possible to be almost certain that the organisms belong to the group.

In some of the acute cases the fever is very high and the patients look very ill. Those with a blood-thirsty type of mind have difficulty in restraining their inclination to resort to surgery. The kidney is often moderately tender and the patient is very ill, and it seems as if something ought to be done to rescue that kidney from destruction by infection. As a matter of fact the disease is so rarely fatal that the possibility may be forgotten except during pregnancy. The patients recover, but the disease can continue as a chronic pyelitis over a long period of years. The more acute the attack, the more certain it is that complete recovery will occur. It is in the milder cases—those in which there is no concern about the life of the patient—that there is more likelihood of the condition becoming chronic.

Particularly in children, but not rarely in adults, the onset may be so mild that nobody knows when it started. It is probably true that the majority of children who are brought to a physician with pyelitis can give no account, and their parents can give no account, of the onset of the disease. It has been noticed that the child is a little less bright and active than usual, but nothing has been thought of it, and the disease is discovered only through an examination of the urine. In fact, pyelitis was considered rare in children before routine examination of the urine became a common practice. These cases may be described as chronic from the start, and the probability of their continuing is much greater than when the onset is acute. It is this group of cases, particularly in children, which gives the greatest concern, because they will go on in spite of most forms of treatment, and, so far as I know to-day, there is no form of treatment which will certainly influence the course of the disease. It would be interesting to inquire whether the disease occurs in adult life, as pyelitis of pregnancy, more commonly in women who have had pyelitis in childhood than in other women. As far as I know, no group of cases has been studied with sufficient accuracy to settle the point.

In the cases in children which are chronic from the start, or which take on a chronic character, there is an increasing opinion that there is abnormality of the kidney. This indicates very directly the need for investigating these kidneys, as it has not been possible to investigate them in the past. I think we are required to-day to examine the kidneys of children with chronic pyelitis with the same care that we examine the kidneys of adults, and to-day this is possible with the smaller instruments which are available. In many cases definite abnormalities will be found, and, at least in some of them, methods of treatment short of operation can be employed. The point I want particularly to impress on you is that we should not be satisfied, when the diagnosis of chronic pyelitis in children has been made, with treatment by medicinal agents, hoping that there will be recovery either as a result of the medicine or by the mere lapse of time. So many of these cases have already been shown to have definite abnormalities that we ought not to rely on the methods of a different day.

UNILATERAL PHRENIC PARALYSIS.

CLINICAL APPLICATIONS OF AN EXPERIMENTAL STUDY.

BY GRACE BRISCOE, M.B., B.S. LOND.

THE clinical justification for this experimental study will be found in a paper by Charlton Briscoe [1] on the syndrome of signs and symptoms arising from unilateral phrenic paralysis. In this he shows that the condition is really far from uncommon, and indicates that in many cases, whether primarily due to malignant growth, enlarged glands, or inflammatory fibrous tissue, the essential cause of the paralysis is simple mechanical pressure on the nerve. What one would expect to provide the most certain means of clinical diagnosis—namely, the behaviour of the diaphragm as observed with X rays—was found, however, to give such indecisive results in some cases that confusion exists in this respect. Radiologists are far from being of one mind as to the typical screen picture produced by paralysis of one half of the diaphragm.[2 3]

It seemed desirable, therefore, to carry out an experimental investigation into the behaviour of the diaphragm following simple mechanical pressure applied to the phrenic nerve on one side.

Experimental Methods.

Only a brief outline of the experiments is given here. Details are recorded in the *Journal of Physiology*.[4]

The movements of the two halves of the diaphragm of the cat were recorded on a moving, smoked paper by means of levers connected by threads and small hooks to the abdominal surfaces of the domes (cupolæ). Inspiration caused a downward movement. The movement of the intact thorax was simultaneously inscribed. This method of recording the action of the diaphragm was chosen because the outline of the domes is the part observed in X ray examination. While the movements of the diaphragm and chest, in response to natural respiratory impulses, were being inscribed on the kymograph, pressure was applied to one phrenic, after dissection in the neck, and the result of blocking conduction in the nerve was seen in the altered movements and level of the dome on the corresponding side.

Particular attention was paid to the following points as they have some bearing on the clinical aspects of unilateral paralysis: (1) The amount of pressure required to cause (*a*) loss of contraction;

(*b*) loss of tone. (2) The time relations of the two halves of the diaphragm during the induction of paralysis. (3) The response to stronger respiratory impulses and the influence of costal or thoracic movements—i.e., of respiratory muscles other than the diaphragm. (4) The course of events during recovery from compression.

1. (*a*) *The amount of pressure necessary to block conduction of respiratory impulses in the phrenic nerve.* This was found to vary with the duration of the pressure. For example, a weight of 400 g. applied to 4 mm. of nerve paralysed the muscle supplied by it in 10 minutes; a weight of 80 g. applied to the same length, in 1¼ hours.

An air pressure of 1100 mm. Hg applied to 6 mm. of nerve paralysed the muscle in 13 minutes; an air pressure of 100 mm. Hg applied for 50 minutes produced a partial paralysis, the excursion of the muscle being reduced by 12 per cent.

The results in general show that the pressure necessary to cause paralysis varies inversely with the duration of application. The amount of pressure exerted by pathological conditions on the phrenic nerve during life is not known. Since, however, the smaller pressures used in these experiments are comparable with the diastolic pressure in an artery, and were found effectual, though only acting during the short time allowed by experiment, we can assume that growths, glands, or fibrous tissue, acting over much longer periods, can easily exert sufficient force to block the passage of nerve impulses.

Systematic measurements of the size of the nerves compressed were not made, but practical difficulties in obtaining complete conduction block in the nerves of large-size animals demonstrate that a relationship exists between bulk and compressibility. This was also found to hold good in some supplementary experiments with gastrocnemius-sciatic preparations from the frog and toad. This relationship between bulk and compressibility has a clinical bearing in that it may explain why small nerves, the phrenic and recurrent laryngeal, show the effects of compression by glands, nodules, &c., more frequently than do the larger trunks of the brachial plexus.

(*b*) *Loss of tone in the diaphragm following compression of the phrenic nerve.* Sherrington [5] has suggested that the diaphragm is in a state of "postural contraction" or "reflex tonus" at the end of expiration, and it is in this sense that the term "tone" is used. Tone, then, being the residual degree of contraction persisting in the muscle at the end of expiration, a diminution is indicated by a greater degree of elevation of the domes in the thorax, and a unilateral defect can only be estimated by comparing the expiratory level of the experimental side with that of the control side.

When one phrenic is rapidly compressed in the neck the corresponding muscle loses tone and rises higher in the chest. This is indicated on the kymograph by the raising of the level of the lever above the previous expiratory level, and can be confirmed by inspecting the abdominal surfaces of the domes. Ken Kuré,[6] who took X ray photographs to demonstrate the position of the diaphragm, has stated that the diaphragm does not lose tone when one phrenic is cut, but with this I am unable to agree.

When the nerve is blocked quickly—e.g., in a few seconds—the loss of tone, as shown by the rapid elevation of the lever, is very striking; if the blocking process is spread over a period of three hours or more the loss of tone is not so readily demonstrable, but can still be shown by a comparison of the expiratory levels of the two levers, before and after compression. Following quick compression the total amount of elevation is distinctly greater than after slow compression. This suggests that a compensatory mechanism of some sort may come into play if paralysis is not produced too rapidly. In the early stages of compression a diminution in contraction can be noted before any loss of tone.

Certain physiological considerations introduce complications in clinical work. It is recognised that the level or postural tone of the diaphragm varies under normal conditions, and that differences can occur between the two sides. Further, the level is subject to extrinsic influences, such as gaseous distension of the stomach. Temporary elevation can be differentiated by the fact that the movements of the two sides are synchronous. Hence there is no hard-and-fast normal expiratory position, and an X-ray picture would show very little difference in the levels of the two sides in a case of unilateral paralysis if taken at a time when a low degree of tone obtained on the sound side.

2. *The time relations of the two sides.* When compression is carried out slowly, the contraction of the muscle on the experimental side is cut down smoothly and gradually, until a very small movement of the lever remains. Before compression the movements of the two levers are synchronous, but as nerve conduction fails a progressive delay in the downstroke of the lever is seen, indicating delay in the commencement of inspiratory contraction. The onset of delay varies in different animals, and may not be apparent until the contraction has been reduced by 50 per cent. This delay becomes more and more marked until, when paralysis is complete, the levers move inversely—i.e., "paradoxical contraction." The extent of this latter movement appears to depend on the degree to which the costal part of the inspiratory apparatus is brought into play. In old animals with small thoracic expansion the movement of the lever on the experimental side may become so small that the time relations cannot be defined. The paralysed muscle is practically immobile.

If dyspnœa causes a large thoracic action the passive movement on the paralysed side may be as large as the active movement on the healthy side, though in an opposite direction. Inspection of the abdominal surfaces of the diaphragm in such a condition shows a remarkable lop-sided action, the paralysed side ascending during inspiration as sharply as the healthy side descends.

The levers attached to the muscle appear to move inversely before they actually do so, a fast tracing revealing only a very marked delay. In several experiments it was thought that complete block had been attained, because the movement on the experimental side was small and apparently inverse, and there was also appreciable loss of tone. On section of the nerve, however, the movement became completely inverse to the sound side, and a further loss of tone occurred. If, on the other hand, compression was maintained until the block was complete, section of the phrenic made no difference either to the time relations or to the elevation.

Under the more difficult conditions of X ray examination the same thing may happen, and delayed action may suggest reversed movement, leading to a diagnosis of complete paralysis before the block is absolute.

3. *The response to stronger respiratory impulses and the influence of costal or thoracic movements.* Under X ray examination, in certain cases of unilateral paralysis, if the patient be requested to take a deep breath an increased movement is observed on the paralysed side, the timing of which is difficult. This could be explained as due to a contraction of the affected muscle in response to stronger respiratory impulses which had succeeded in forcing their way past the nerve-block. On the other hand, it might be due to an exaggeration of the passive movement imparted to the diaphragm by the lungs and chest, since the main effect of a deep voluntary inspiration is an increased costal movement. It has long been accepted that quiet, normal respiration is carried out mainly by the diaphragm, while "all difficult, sudden, and extraordinary breathing is costal" (J. Hutchison[7]).

The first possibility was tested by producing temporary hyperpnœa in the animal by means of CO_2 inhalation, or faradic stimulation of an afferent nerve. It was found that the resultant stronger impulses were no more effective in producing an active

contraction on the affected side than were the weaker impulses of quiet respiration.

The second possibility was confirmed by experiments in which the animals spontaneously took deep inspirations. Before pressure these deep inspirations showed as slightly increased downward movements on both sides of the diaphragm, while the thoracic expansion was markedly increased. During complete paralysis there was inverse movement of the two halves in quiet breathing. On deep inspiration a greatly increased upward (therefore passive) movement occurred on the affected side, and a slightly increased downward movement on the sound side. In the intermediate stage of partial paralysis the contractile power of the muscle was diminished, but not destroyed. The experimental side still descended in quiet, normal inspiration, though its action was much delayed. When hyperpnœa or a single deep inspiration occurred the paretic muscle was unable to resist the increased intrathoracic pull and was moved passively upwards.

The experimental evidence, then, shows that any increased movement appearing on the paralysed side when a deeper breath is taken is not due to a nerve impulse which has forced its way past the pressure block, but is produced by mechanical factors.

The possible expansion of the human thorax in its lower part is relatively less than that of the cat, and the changes seen under X ray examination are not likely to be so marked as these animal experiments suggest. In these, as in patients, it was found that the older the subject the less was the costal movement, because of the greater rigidity of the thorax. A mobile thorax clearly can produce greater and more sudden changes of intrathoracic pressure than one which is relatively fixed. In addition the effect of the anæsthetic has to be considered as accentuating the depth of respiration in general.

4. *Recovery.* The recovery of contractile power occurs as smoothly and gradually as the diminution in movement is produced. Recovery of contraction always precedes recovery of tone. Although, on various occasions, the experimental side has been seen to move as well after compression as before, it has not been possible to prolong an observation for sufficient time to see if complete recovery of tone takes place.

The recovery from birth palsy is interesting from this point of view. Injury to a phrenic nerve at birth, causing unilateral paralysis, is occasionally seen as a result of pressure by forceps. Reports of such cases giving fluoroscopic findings are rare. Kofferath [8] has reported a case which showed the typical X ray picture of paradoxical movement and marked elevation on the right side. At the age of 4 months the respiration had become completely normal, the diaphragm moved equally and synchronously on the two sides, but the right side was still somewhat above its normal level. Friedman and Chamberlain [9] have also reported a case of right-sided palsy. In their case respiratory disturbances were more marked and prolonged. The paradoxical movements on the injured side were only slightly less than those on the healthy side. At 3 months of age the respiration had become normal. At 8½ months the fluoroscope showed that the two sides were moving synchronously, and with the same range of motion, but that the right side was still a trifle, about half an interspace, above the normal level.

If compression is stopped directly the signs of paralysis have appeared, recovery of movement occurs very rapidly—i.e., an improvement in contraction may be noted within a few seconds. This confirms the notion that the mechanical compression is the essential cause of the paralysis. If pressure is excessive, or maintained after paralysis is complete, recovery is delayed.

Summary of Experimental Conclusions.

1. The functions of tone and contraction are separate factors, and are affected in different degrees by pressure on the phrenic nerve.

2. Experimental pressures comparable to those occurring in the body can obstruct the respiratory impulses in the phrenic nerve.

3. The amount of pressure required to produce paralysis varies inversely with duration of application.

4. The longer the time taken in compression of the nerve the less obvious is the loss of tone, as indicated by elevation, suggesting the development of some compensating mechanism which has not been studied.

5. Complete nerve-block is shown either by reversed movement or by immobility, the latter occurring when the thoracic expansion is small. Elevation is present in varying degree.

6. Incomplete nerve-block is shown by diminution of inspiratory descent, and by delayed action on the affected side. This unilateral lagging becomes obvious in the later stages.

Clinical Applications of Experimental Results.

The appearances one would expect to find in an X ray examination of a clinical case of paralysis of one-half of the diaphragm are:—

(*a*) An elevated position of the affected side due to loss of the tone or postural contraction which normally prevents complete relaxation.

(*b*) "Paradoxical contraction" or "reversed movement"—i.e., ascent of the affected side during inspiration, while the healthy side descends, because the paralysed muscle cannot resist the aspiration of the chest, and is moved passively.

This typical appearance was seen in some of Charlton Briscoe's cases, and was found by Woodburn Morison [10] to be constant in "eventratio diaphragmatica," a congenital condition in which the muscular tissue on the affected side is undeveloped. The difficulty was to explain why in many undoubted instances of acquired paralysis reports were received, such as "slight movement," "scarcely any movement," and elevation was by no means constant. There are several instances in the cases of acquired paralysis described by Morison where the elevation was only slight.

It is now possible to state that—

1. Pressure does not abolish contractile power suddenly, but reduces it gradually. Hence, if paralysis be partial, contraction will only be reduced in proportion, and every grade between slight diminution and complete inverse movement can occur.

2. Reduction in extent of contraction is accompanied in the later stages by delay in action. Hence, the time relationships between the two sides are altered, and in the absence of other pathological conditions unilateral lagging should suggest the possibility of pressure on the phrenic nerve.

3. Diminution in "tone" does not run a parallel course with diminution in contractile power. Hence, elevation in the thorax need not be proportional to loss of contractile movement.

4. In cases of gradual onset the effects of loss of tone (elevation) may be modified by some compensatory mechanism. This tends further to increase the disproportion between elevation and diminution of contractile movement.

Considering all these points together, it seems clear that cases of complete unilateral paralysis occurring in young patients with free thoracic movement will provide a typical appearance of inverse movement and elevation. In older patients, in whom the thorax is more fixed and the lungs less elastic, these appearances will be less marked. Cases of partial paralysis, on the other hand, cannot be expected to present a precise diagnostic picture, but will yield apparently indefinite results. This explains the varied reports received about many of Charlton Briscoe's patients, and leads to the final conclusion *that a majority of the cases met with in clinical work are instances of partial—not complete—paralysis.*

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(*Continued at foot of next page.*)

ON SOME EFFECTS OF PRIMARY AND SECONDARY X RAYS UPON THE SKIN OF THE FROG TADPOLE.*

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IN October, 1923, the present authors, in collaboration with Mr. C. P. G. Wakeley, F.R.C.S., published a note on the effects of the prolonged action of X rays upon the skin of the frog tadpole.[1] Consisting as it does of but two clearly differentiated layers of cells the epidermis affords an admirable medium for the observation of changes occurring as the sequel to irradiation, more especially when these are hypertrophic in character. It is, moreover, a young and actively growing tissue, and therefore responds well to the action of the rays.

Under normal conditions the two epithelial layers are clearly differentiated from each other and from the subjacent corium. The superficial layer of cells is somewhat flattened, the outlines of the cells of the deeper stratum are more or less polygonal, while the nuclei roughly correspond in shape to the outlines of the cells. The cell outlines are remarkably well defined and, indeed, present many of the appearances of typical cell walls, even to distinct thickenings in the angles between contiguous cells. (Fig. 1.)

The corium varies greatly in depth, but it is never so wide as to exceed the width of the epidermis. Its structure is nowhere very obvious, since it stains as a more or less homogeneous pink mass, although a meshwork of white fibrous tissue and a network of elastic fibres can be more or less indistinctly seen. A few oval or polygonal cells are also seen; these give off numerous finely branching processes and have large nuclei with well-defined nucleoli. It is, however, the large pigment cells which constitute the most obvious feature of the corium. Generally speaking, these are deep in position and lie close to the muscle bundles. They vary considerably both in size and shape and usually have very distinct arborescent processes.

Throughout our experiments we made use of an ordinary Coolidge tube and the induction coil employed in the routine therapeutic work of the hospital. Variations in the conditions of working were made in different series of observations and will be duly noted as occasion requires. The tadpoles were exposed to the rays in circular flat-bottomed dishes containing water or dilute mixtures of colloidal element and water.

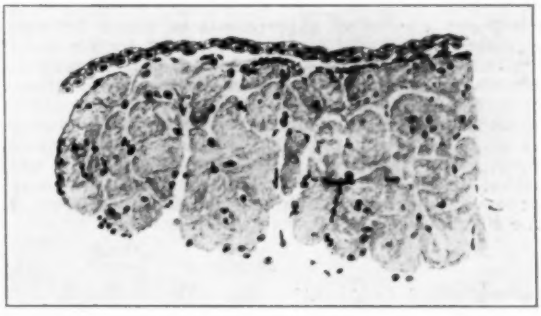
Group I.

Tadpoles irradiated in ordinary tap water. Coolidge tube working at 2 milliampères with a 7-in. spark-gap. Distance of anticathode from surface of water 6½ in. Depth of liquid in glass dishes, 1½ in. The tadpoles were divided into three batches and irradiated for 1½, 2, and 5 hours respectively. Individuals were killed at different periods after exposure, fixed in 50 per cent. alcohol, and after the usual preliminary processes, cut in paraffin in the ordinary way. The stain employed was hæmatoxylin and eosin.

Here the most obvious sequel to exposure was a hypertrophic change which, in specimens removed immediately after exposure, was only suggested by increased nuclear activity in the "1½-hour" specimens, but was clearly demonstrable in the "2-hour" specimens; while in the "5-hour" specimens, although hyperplastic areas could be differentiated, the main picture was one of degeneration.

Specimens Killed 24 hours after Exposure.—Here the "1½- and 2-hour" specimens showed progress in the hyperplastic process as shown by increased nuclear activity and cell proliferation, which caused a loss of demarcation between the superficial and deep epidermal layers. The hyperplastic process was accompanied by a loss of cell outline, so that the appearance was that of a syncytium, which was associated with a quite definite invasion of the corium. The "5-hour" specimens, although showing traces, or rather remains, of hypertrophic processes, presented generally the appearances of degeneration. The syncytium formation, to which reference has just been made, is a characteristic feature of the hyperplasia occurring in tadpole epidermis as a sequel to irradiation, cell outlines being completely lost and a multinucleated mass of protoplasm resulting.

FIG. 1.



Section across integument and underlying muscle of normal tadpole. Note the epithelium consisting of two clearly differentiated layers of cells.

Specimens Killed at Later Periods after Exposure.—The hyperplastic changes in the "1½-hour" specimens would appear to reach their maximum in about 84 hours after exposure; after that the changes are retrogressive in character, so that specimens examined seven days after irradiation show complete epidermal atrophy. In the "5-hour" specimens this atrophic condition was found 96 hours after exposure. Thus the description of the "1½-hour" specimen examined seven days after irradiation is as follows. "There is complete atrophy of the epidermis, which is represented merely by a wavy line with a few small local thickenings. The line consists of an evenly stained strip which has taken up the eosin and hæmatoxylin approximately equally and so presents the appearance of a narrow, evenly stained lilac ribbon."

Group II.

Conditions as before, but a small quantity of *protargol solution* added to the water in which the tadpoles were exposed, so that the total concentration of protargol was about 0·04 per cent. Distance of anticathode from surface of liquid, 6½ in. Depth of liquid, 1½ in. In this case the tadpoles were exposed not only to the primary beam of X rays directed upon them from the Coolidge tube, but also to the secondary radiations from the finely divided silver dispersed throughout the medium in which they were exposed. All were exposed for two hours.

Specimens Examined Immediately after Exposure.—All the cells were somewhat small and appeared a little shrunken. Signs of hyperplasia were, however, present both in the epithelium and in the connective tissue elements of the corium.

Specimens examined 48 hours after Exposure.—These specimens exhibited hyperplasia of the epithelial cells to a much greater extent than had been seen in any examples

* The expenses of this research were defrayed by a grant from the Medical Research Council.

[1] Colwell, Thomson, and Wakeley: The Effects of X Rays upon the Skin of the Frog Tadpole, Jour. Anat., lviii., Part 1, October, 1923.

(*Continued from previous page.*)

3. Wessler and Jaches: Clinical Roentgenology, 1923, p. 507.
4. Grace Briscoe: Jour. Phys., 1926, lxi., 353.
5. Sherrington: Brain, 1915, xxxviii., 213.
6. Ken Kuré: Zeitschrift f. Exp. Path. u. Therapie, xvi., 395.
7. J. Hutchinson: Todd, Cyclop. Anat. and Phys., 1849, iv., 1080.
8. Kofferath: Monat. f. Geburt. u. Gyn., lv., 34.
9. Friedman and Chamberlain: Jour. Amer. Med. Assoc., lxxxvi., 934.
10. Woodburn Morison: Loc. cit.

hitherto examined. The epithelium generally showed an increase to about four or five cells in thickness, while in places this was sometimes exceeded. The hyperactivity was fairly constant over the whole of the skin and was not limited to isolated patches. Obliteration of cell outlines was frequent, thus giving rise to an exaggerated picture of the syncytium formation produced by simple irradiation in water without the addition of protargol. Corresponding increase in activity was also shown by the connective tissue cells of the corium, which showed a marked tendency to branching; the pigment cells were small but markedly arborescent.

From this it is clear that the secondary X rays from the finely divided silver had a very definite and marked effect in accelerating and accentuating those hyperplastic changes in the epithelium, which have been shown to occur as an early result of exposing tadpoles to the action of the mixed radiations from a Coolidge tube in ordinary water.

It is, of course, well known that different elements when exposed to a suitable beam of X rays give off secondary radiations which are characteristic as regards their wave-length for the particular element used. Moreover, these characteristic secondary X rays have definite relations to the atomic number (or the number representing the position of the element in the periodic series) and consequently to the atomic weight of the element in question. We accordingly determined to carry out a series of experiments in which different elements in colloidal form[1] were added to the water wherein the tadpoles were exposed, and thereby to ascertain if the effects of the secondary radiations from other elements resembled or differed from those of the secondary radiations from silver. The stock colloids in all cases were supplied in a concentration of 1 in 2000, and 10 per cent. of this stock "collosol" was added to the water in which the tadpoles were exposed. The atomic numbers and atomic weights of the elements thus used were as follows:—

	Atomic number.	Atomic weight.
Copper	29	63·5
Selenium	34	79·2
Silver	47	108·0
Gold	79	197·2
Lead	82	207·0
Bismuth	83	209·0

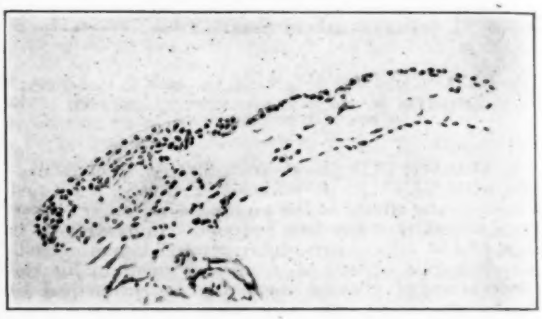
Group III.

Tadpoles irradiated for 1½ hours in water to which 10 per cent. of different collosols (1 in 2000) were added. In each case the anticathode of the Coolidge tube was 12 in. from the surface of the liquid, while the depth of the liquid was in each case about ½ in. The 10 per cent. mixture of the gold collosol and water was found to be so toxic in its action that it could not be used; but a 5 per cent. mixture was found to be practicable and reference to the results obtained will be made subsequently. The specimens examined were as under:—

Copper.	Selenium.	Silver.	Lead.	Bismuth.
72 hours	72 hours	72 hours	—	—
—	96 "	—	96 hours	96 hours
17 days	17 days	17 days	16 days	16 days

Specimens Examined 72 hours after Exposure (copper, selenium, silver).—*Copper:* These specimens showed only slight deviations from the normal. Such changes as were found were in the direction of atrophy and there was no suggestion of hyperplasia. Some vacuolation of cytoplasm and shrinkage of nuclei. *Selenium:* The epidermis showed degenerative changes, but not so marked as with the "copper" specimens, and in addition some few hyperplastic areas could also be detected. The hyperplasia was most marked on the limbs. Even in the hyperplastic areas degenerative changes had already made their appearance. *Silver:* The superficial epidermal layer showed no evidence of any degeneration; in the basal layer, however, were some distorted nuclear forms and vacuolated cytoplasm. In some places the epithelium is increased to four or more layers in thickness. The hyperplastic changes were most marked in regions where the cross section of the body was the smallest—e.g., the tail or limbs—and here also the outermost layer of cells stained definitely pink and showed striation, as though some attempt at keratin formation were taking place. (Fig. 2.)

FIG. 2.



Section to show tadpole epithelium. Specimen killed 72 hours after irradiation in 10 per cent. mixture of "collosol" selenium. Note the hypertrophic patch to the left of the figure.

Specimens Examined 96 hours after Exposure (selenium, lead, bismuth).—*Selenium:* Extensive vacuolation of the epidermal cells was the predominant feature, while the small patches of hyperplasia also showed degenerative changes. *Lead:* The appearances in the epidermis were mainly of a degenerative character; sometimes degeneration had progressed so as to lessen the depth of the epidermis to about one-half of its normal. *Bismuth:* Degeneration was again the outstanding feature and no hyperplasia was seen.

Specimens Examined 16 or 17 days after Exposure (copper, selenium, silver, lead, bismuth).—*Copper* (17 days): Occasional hyperplastic areas, but these are ill marked. The general picture presented by the epithelium is one of degeneration; in some places this had progressed to such an extent that the cytoplasm of both epidermal layers had coalesced and stained as a homogeneous mass with occasional suggestions of degenerated nuclei. *Selenium* (17 days): The general appearances much the same as in the "copper" specimens. The evidence of hyperplastic change was, however, rather more definite. *Silver* (17 days): The most striking features are well illustrated in Fig. 3. There are

FIG. 3.

Section to show enormous epithelial hypertrophy. Tadpole irradiated 1½ hours in 10 per cent. mixture of "collosol" silver. Note general epithelial hypertrophy and the definite wart-like outgrowth.

patches of such marked hyperplasia that they practically amount to excrescences. In them all differentiation between the two epidermal layers is completely lost. The cells are large, and cuboidal or oval; while the nuclei are large, stain well, and have remarkably distinct chromosomes and nucleoli.

There are two outstanding features in the hyperplastic areas. The first is the presence of elliptical cells with no obvious nucleus, and yet containing a rounded and more faintly staining body. They are very suggestive of "Paget cells," and therefore of early malignancy, and this in spite of the fact that there is no definite sign of downward growth and invasion of the corium. The second feature is, however, perhaps the more striking. There are many dark brown

[1] The colloidal elements used in this research were the standard "collosols" for therapeutic use kindly supplied to us by the Crookes Laboratories, to whose chief chemist, Mr. Ward, B.Sc., we desire to express our best thanks.

bodies contained within the cells; these sometimes assume a digitate appearance, or they may resemble barbed arrow-heads. The former is the more characteristic, and its mode of formation may be deduced from the appearances of several cells in the section from which Fig. 3 was drawn. In these cells the protoplasm immediately surrounding the nucleus is seen to contain a very finely divided pigmentary deposit, while the protoplasm itself has assumed a figure somewhat reminiscent of an aurora borealis. There is a "dusty" area immediately surrounding the nucleus, and from this central body radiating "fingers" emerge. Between this stage and the finished brown figure many intermediate forms can be detected. It would thus seem that the curious shape is due to a "scaffolding" formed by the protoplasm, and is not formed by any characteristic crystallisation of the silver. That this deposit is silver and not melanin has been demonstrated in other sections by the ordinary photographic processes of bleaching out with potassium ferricyanide and sodium thiosulphate. Slight "development" was obtained with hydroquinone, and "intensification" by treatment with mercuric chloride followed by ammonia. This hyperplastic change far exceeds any seen in all the specimens we have examined.

Lead (16 days), *Bismuth* (16 days): Main changes degenerative in character, with traces of hyperplasia. The changes generally are less marked in the "bismuth" specimens.

Tadpoles irradiated as before, but strength of mixture in which they were irradiated was 5 per cent. instead of 10 per cent.—As previously mentioned, the 10 per cent. gold mixture was for some reason or other too toxic for the specimens to remain in it for more than a few minutes. Some exposures were therefore made in 5 per cent. mixtures.

After 48 hours: Markedly hypertrophic changes were found, especially in the epithelium covering the limbs and tail. After 8 days: Hyperplasia was marked in the limbs and tails and all distinction between the epithelial layers lost. The superficial cells exhibited signs of keratinisation, while centrally syncytium formation was evident. After 20 days: The outstanding features were those of degeneration, but remains of hyperplasia and syncytium formation were still evident in the basal layer

The colloidal elements used in 5 per cent. mixture were copper, selenium, gold, lead, and bismuth. The temporary hypertrophic changes in the gold specimens have just been noticed. Irradiation for 1½ hours in the presence of 5 per cent. copper mixture led to destructive and degenerative changes, with only here and there suggestions of hyperplasia. With selenium the results were much the same, but small hyperplastic areas were more definite. With gold, as just seen, the hyperplastic changes were well marked for a time, but succeeded by degeneration. With lead and bismuth degeneration and atrophy predominated, but some hyperplasia could also be made out.

Conclusions.

Throughout the series of experiments we have described the tadpoles were, of course, exposed to the general beam of mixed radiations from the Coolidge tube as well as to the secondary radiations from the admixed colloidal elements. It has also been shown that the effect of exposure to the primary X rays from the tube (in the absence of any added colloid) is to produce a fairly marked temporary hypertrophy followed by degeneration. Yet taking these factors into account it would appear that the secondary radiations from copper are mainly destructive in character, as are also those of selenium, though here the destructive changes are less apparent and the evidence of temporary hyperplasia are more marked.

In contrast with these changes are the effects produced by irradiation in the presence of colloidal silver, where the hypertrophic changes are predominant and exceed in amount those produced by irradiation in the presence of any other colloid used, while their persistence is also equally striking. Irradiation in the presence of colloidal gold (5 per cent. mixture) also produced marked hypertrophic changes, more especially on the limbs and tails of the embryos. Next to those caused by irradiation in the presence of silver, these were the most marked hyperplastic changes we observed. In the lead and bismuth series hyperplasia was less marked and disappeared sooner than in the silver or gold series.

The results suggest that the extraordinary hypertrophic changes due to irradiation in the presence of colloidal silver are due to some special action of some of its characteristic radiations; and as these changes are still very well marked in the case of gold, that probably some series of wave-lengths are specially concerned in producing this hyperplasia.

SYPHILIS OF THE HEART AND AORTA.*

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THE subject of syphilis of the heart and aorta is one of great importance, and also one of great difficulty, more especially with regard to the relative frequency, and diagnosis of the condition. These are intimately bound up with ætiological and pathological considerations. I shall confine my remarks to the acquired form of the disease, for the reason that the congenital form lies almost entirely outside my experience.

Pathology and Relative Frequency.

Acquired syphilis may attack the aorta, the cardiac valves, the coronary arteries, the myocardium, the auriculo-ventricular junctional tissues, and the pericardium. With regard to the aorta, Prof. H. M. Turnbull [1] found that in 288 necropsies at the London Hospital, in which lesions of acquired syphilis were present, the most common syphilitic lesion was mesaortitis. This affection is the result of inflammation of the vasa-vasorum and their terminations in the external and middle coats of the aorta. There is perivascular infiltration of lymphocytes and plasma cells, accompanied by periarteritis and endarteritis—indeed, in the great majority of cases, all the coats are involved. Ultimately the lumen of the vessels may become completely closed. The adventitia, and, later, the media, of the areas of the aorta supplied by the inflamed vasa-vasorum are secondarily affected, and the inflammation is mainly confined to these coats. The inflammation in the media is followed by absorption, and, it may be, necrosis, of the elastic tissue and muscle-fibres, and, at a later period, by new formation of fibrous tissue. This leads to local weakening of the vessel, which may give rise to aneurysms, varying from a minute to large size. The intima over the areas of inflammation is usually thickened. The thickening of the intima is merely secondary, and is protective or compensatory. It is due to the connective tissue laminæ being increased in size and number, often an ingrowth of new vessel formation from the media, and sometimes cellular infiltration from the other coats of the aorta. In the early stages there is an absence of evidence of fatty and calcareous degeneration—a fact which may be due to the ingrowth of new vessels from the media. The secondary thickening of the intima has been confused with atheroma. Mott, Marchand, Turnbull and others have described the distinctive features of syphilitic mesaortitis and atheroma. It is necessary to point out and emphasise that this distinction is even yet not nearly sufficiently appreciated, and is not even admitted by some. Prof. Turnbull has shown that the secondary thicken-

* Being a contribution to a discussion at a meeting of the Medical Society for the Study of Venereal Diseases on Feb. 26th, 1926.

[1] Turnbull, H. M.: The Quarterly Journal of Medicine, April, 1925, viii., No. 31.

ing of the intima in syphilitic mesaortitis may be distinguished from atheroma by the naked eye—by its greater latitude and prominence, its crenated outline, pearly colour, pitted surface, and rubber-like consistency. The pitting and scarring are due to the replacement of the media by fibrous tissue. Having pointed out these distinctive features, however, I may add that in the later stages atheroma usually occurs in the thickened intima over the areas of inflammation, this process being exactly similar to the secondary atheroma which occurs in the attack of acute endocarditis due to rheumatism; also that syphilitic mesaortitis and primary atheroma may coexist, especially in later life.

The ascending part of the aorta is the most commonly affected. The disease-process in the aorta may involve the aortic valve, and occasionally it extends to the base of the aortic cusp of the mitral valve. The inflammation is similar to that of the aorta. In the case of the aortic valve, it results in incompetence and occasionally in stenosis. Syphilitic mesaortitis may also give rise to occlusion of the orifice of one or both of the coronary arteries. Syphilis may also affect the terminal branches of the coronary arteries. In syphilis of the coronary arteries, the aorta is usually affected at the same time. If, from any cause, the orifice, or the trunk, or one of the main branches of a coronary artery be completely and abruptly closed, sudden death, without the occurrence of structural changes, may occur; or infarction, and later, secondary fibrosis, may ensue, resulting in weakening of the cardiac wall. In those cases in which, from any cause, closure of a coronary artery or one of its main branches is gradual, or is only partial, and in cases of narrowing or occlusion of the terminal branches, infarction does not take place; local anæmia results, and consequent atrophy of the muscle-cells and secondary fibrosis. Gummatous deposits, with secondary fibrosis, also occur in the cardiac wall, but they are of comparatively rare occurrence. It will thus be seen that in syphilis, fibrosis of the myocardium may be the result of coronary disease, or gummata. Any of these lesions may involve the auriculo-ventricular junctional tissues and give rise to auriculo-ventricular heart-block. Syphilis of the pericardium is of rare occurrence. I myself have only seen a few doubtful cases. I shall dismiss the subject in a few words. The disease more commonly attacks in the form of an infiltration, with consequent formation of fibrous tissue, resulting in adhesions between the two layers of the pericardium, while in some cases there is effusion of fluid into the pericardial sac. Gummata are of rare occurrence. The affection is usually latent. The diagnosis is sometimes possible from the discovery of the clinical features in a known syphilitic subject. The prognosis depends mainly upon how early the diagnosis is made and treatment undertaken. Small gummata, when treated early, respond to adequate therapeutic measures, but when fibrosis has occurred the condition is irremediable.

The foregoing is a brief summary of the lesions which it is generally agreed syphilis may produce. But this does not by any means exhaust this part of our subject. I am well aware that we are now entering upon a field of great difficulty and even of controversy; for, among other things, the whole subject of the pathology and ætiology of arterial disease is involved. But certain questions are of the greatest practical importance with regard to the relative frequency of syphilis as a cause of diseases of the heart and aorta, and differential diagnosis and treatment. Thus, in addition to the fact that syphilitic aortitis may involve the aortic valve and the base of the aortic cusp of the mitral valve, is syphilis among the causes of primary chronic endocarditis of one or more of the cardiac valves? There is no evidence that it is. Again, apart from inducing secondary fibrosis in the manner described, may syphilis give rise to fibrosis of the myocardium independently—in other words, is it among the causes of primary chronic myocarditis—i.e., a true inflammation? There is no doubt that syphilis may give rise to a primary chronic inflammation elsewhere; and it would appear that congenital syphilis does so in the case of the myocardium. Some authorities are of opinion that acquired syphilis may cause a patchy or a diffuse fine fibrosis independently of the coronary arteries, while others are not. In any case, the histological diagnosis is very difficult even in the early stage, and is perhaps impossible in the later stage, so that it is probable that many of the cases of fibrosis of the myocardium in elderly people which are thought to be the result of syphilis are not so. Or, again, and perhaps most important of all, is syphilis a cause of primary atheroma? In my opinion it is not.

Syphilis is the cause of a large proportion of all cases of aortic incompetence, and also an important ætiological factor of angina, especially under the age of 40. But I would submit that in considering the relative frequency of syphilis in affections of the heart and aorta, there is now a danger of going to the other extreme. Thus, statements to the effect that syphilis is responsible for from a quarter to a third of the total number of cases of organic disease of the heart, for about three-quarters of all cases of aortic regurgitation, and almost invariably for cases of aortic incompetence in which there is an absence of a definite history of acute rheumatism should be accepted with the greatest reserve. In considering the relative frequency of syphilis as a cause of diseases of the heart and aorta, we have to consider the questions of a history of syphilitic infection, of a positive Wassermann reaction, and of other syphilitic stigmata during life; and of the specific nature of, or the presence of the *Spironema pallidum* in, the lesions of the heart or aorta themselves, or the presence of other undoubtedly syphilitic lesions, or of a positive Wassermann, on post-mortem examination. Of course, syphilis of the heart and aorta would be of very frequent occurrence if all the lesions found in the heart and aorta post mortem in those in whom there was a history of antecedent syphilitic infection, or of a positive Wassermann, or even of other syphilitic stigmata, during life, or even of a positive Wassermann after death, are to be regarded as syphilitic in origin. It is, I hope, not necessary to point out that such lesions are not necessarily syphilitic. Other evidence is required in order to be certain that a lesion is of specific origin. Such are (1) the detection of the *Spironema pallidum* in the lesion itself, or (2) the specific histological character of the lesion.

Symptoms and Diagnosis.

In aortitis, pain is the most frequent and characteristic symptom, and it is exceedingly important to recognise it. It is situated behind the upper part of the sternum, and is generally localised there, but it may radiate to the arms and neck. It may vary from slight discomfort or a sensation of pressure to an intense pain. It may be more or less constant or intermittent. Occasionally there are paroxysms of pain, accompanied by a feeling of suffocation. The pain may come on spontaneously—that is, apart from physical exertion—especially when lying down, or it may occur only on exertion; it is usually aggravated by exertion; it may not completely disappear on cessation of exertion. There may be hyperæsthesia over the painful area. Occasionally severe attacks of suffocation occur, and tachycardia may often be noted. The pain may disappear after a few months or weeks—either spontaneously or as the result of treatment. It may be followed by angina pectoris. Some observers are of opinion that sometimes, during the early stage, rubbing sounds along the right border of the sternum may be noted, especially when the patient leans forward; personally, I have never been able to detect this. At a later stage there may be indications of fusiform dilatation of the aorta. There may be pulsation in the neck, particularly in the suprasternal notch, and in the first and second intercostal spaces on either side of the sternum; impairment of percussion over the

manubrium sterni and on either side of it; a systolic murmur over the aortic area; while the second sound may exhibit a musical, bell-like, or clanging quality. With the X rays, the aorta may show diminished translucency and an increased diameter. Alteration in the voice and tracheal tugging are occasionally to be noted.

Later, the clinical picture of aortic incompetence, or of myocarditis, or saccular aneurysm may develop. With regard to the first, shortness of breath on exertion is probably the most frequent symptom of all. The largest group present symptoms of systemic anæmia, such as giddiness, syncope or fainting attacks, early fatigue on mental effort, sleeplessness, and headache. What is often termed "cardiac asthma" is comparatively frequent. Pain in the precordium is of fairly frequent occurrence, but is not so common as in aortitis. Angina pectoris is relatively infrequent. Indications of chronic venous congestion supervene in a comparatively small proportion of cases. General œdema is only occasionally met with. I would emphasise the great importance of an early and most careful search for the presence of a diastolic murmur over the base of the heart, over and on either side of the sternum, and at the apex—in fact, over the whole precordial area. In the early stage the murmur is often faint, and may be audible only after emptying the chest after a deep inspiration, and may be heard on some occasions and not in others. There is less tendency for the systolic blood pressure to rise, and, still more so, for physical signs of left ventricular hypertrophy to develop, than in the case of aortic incompetence due to other causes; I have observed some cases which proceeded to a fatal termination with an absence of evidence of left ventricular hypertrophy during the whole course of the illness. Involvement of the myocardium may reveal itself on polygraphic and, more frequently, on electrocardiographic examination by the presence of the first or second grade of auriculo-ventricular block, and rarely by bundle-branch or intraventricular block, and, in one case of my experience, by transient attacks of auricular fibrillation. If complete auriculo-ventricular block occurs, it usually does so in the later stages. Subacute bacterial endocarditis may supervene. Sudden death may occur, and may be due to complete and abrupt closure of the orifice, or trunk, or one of the main branches of a coronary artery, to rupture of the heart, fatal syncope, or angina pectoris.

The foregoing description covers the great majority of cases. It is necessary to add the following: Relative, and even complete, recovery—either the result of specific treatment or spontaneous—may occur at any period. There may be exacerbations of the disease all through life. Sometimes aortitis escapes notice altogether, and the clinical picture is that of aortic incompetence developing insidiously. The clinical picture may be that of acute general cardiac failure, it may be proceeding to rapid dissolution. Sometimes the condition is only discovered post-mortem. In the early stages the Wassermann reaction is almost invariably positive, but as the disease becomes more chronic it is increasingly negative.

The diagnosis is sometimes comparatively easy, but may be very difficult. In its consideration the following points, among others, require consideration: The age, the previous history, the history of the present illness, the subjective symptoms, the results of physical and instrumental examination, the Wassermann reaction, the presence or otherwise of syphilitic stigmata, and the course of the disease. With regard to the previous history, may I remind you that it is very easy to overlook a rheumatic infection in childhood. There may also be a history of rheumatic and syphilitic, and even other, infection in the same patient. There may be a combined lesion. I would emphasise the importance of pain behind the upper part of the sternum, presenting the characteristic features described. If it has been possible to obtain a full and accurate history, it will be found that in the vast majority of cases it has been present in the early stages. The pain differs from that of angina pectoris in that it is less paroxysmal, its localisation is higher, it has a far less tendency to radiate to a distance, and it is more likely to come on spontaneously and not to cease completely after exertion is over. The presence of a systolic murmur over the aortic area, an altered second sound in the manner described, and the result of an examination with the X rays are of considerable diagnostic importance. It is necessary to exclude aortitis due to infection by pyogenic organisms of a subacute or chronic type, by the tubercle bacillus, and other organisms, aneurysm, and atheroma. The last named, when limited to the aorta, however, rarely causes pain. A cardiac lesion coming on in middle life, if antecedent rheumatic infection can undoubtedly be excluded, is strongly suggestive of syphilis, as also is angina pectoris occurring before the age of 40. A combination of aortic and mitral valvular disease, especially before 30 years of age, is strongly suggestive of being of rheumatic origin. Atheroma much more frequently causes aortic stenosis than incompetence. A Wassermann test should be done in all doubtful heart cases, and in all cases of aortic disease—even if there is a history of acute rheumatism. I need not remind you that a negative Wassermann is not so valuable as a positive reaction, that a single negative reaction does not exclude syphilis, and that in some cases it may be advisable to employ a provocative dose of salvarsan or one of the other organic arsenical preparations. We should, on the other hand, be careful not to place too much reliance on the result of the Wassermann reaction; it should be considered in conjunction with other clinical data. A positive Wassermann does not indicate that the malady from which the patient is suffering is necessarily syphilitic; the same applies to the coexistence of other specific stigmata. There may also be a double lesion.

Prognosis.

This depends largely, perhaps very largely, upon early diagnosis, and the kind of treatment adopted. Taking cases as a whole, the prognosis is very unfavourable, due, no doubt, to the fact that a correct diagnosis is not often made until the later stages of the disease. I venture to hope that in future an early diagnosis will be arrived at with increasing frequency. When untreated, the lesion is usually progressive, it may be rapidly so, and the mortality is high. If, on the other hand, a diagnosis is made early, and treatment is prompt and adequate, especially when the patient has not received specific treatment previously, there is a reasonable prospect of relative recovery, and occasionally recovery is even complete. Naturally, the prognosis is much more favourable in the absence of aortic incompetence, involvement of the coronary arteries and of the myocardium, angina pectoris, and aneurysm. Prompt and adequate treatment of aortitis may prevent the aortic valve, coronary arteries, and the myocardium becoming involved, and the formation of a saccular aneurysm. Even in the absence of angina pectoris and aneurysm, in aortic regurgitation the prognosis is usually very unfavourable, death often taking place within two or three years after the onset of subjective symptoms. Two important points in all cases are the degree of cardiac failure present, and its rate of advance. Help is sometimes obtained from the results of polygraphic, and still more frequently of electrocardiographic, examination. Thus, the presence of alternation of the heart in the absence of a severe grade of tachycardia is an indication of extreme exhaustion of the heart muscle; the occurrence of partial heart-block is a sign of myocardial involvement; persistent heart-block of mild degree is also indicative of myocardial damage; bundle-branch block is usually of very unfavourable significance; and intraventricular block is usually of grave import. A few cases of complete auriculo-ventricular block have been recorded in which energetic specific treatment appears to have been rewarded with

recovery, but as far as my experience is concerned, anti-specific treatment is of no avail at this stage.

Lastly, in all types of cases, marked and surprising improvement is occasionally met with when adequate specific treatment is adopted.

Treatment.

The various measures which may be applicable to any form of cardiac disorder should be considered in detail. Apart from these, the indication is for anti-syphilitic treatment. This should be adopted in every case in which a definite diagnosis of syphilis of the heart or aorta is arrived at, even if the Wassermann reaction is negative, and in every case of disease of the heart or aorta in which there is a positive Wassermann or other manifestations of active syphilis, even in the absence of clinical evidence that the lesions of the heart and aorta are of specific origin. Cardiac failure is not a contra-indication. It is impossible to exaggerate the importance of the adoption of this method of treatment *promptly*. It should also be *prolonged*. I am a firm believer in the employment of the arsenical preparations, but only under certain conditions. Their indiscrimate use is attended with danger, even of grave degree; they may result in further swelling of the intima of the small vessels, and thus increase the risk of thrombosis. I always recommend a preliminary course, of three weeks' duration, of mercurial inunction and of iodide of potassium by the mouth—10 gr. thrice daily during the first week, increased to 15 gr. during the second week, and to 20 gr. during the third. This to be followed by one of the arsenical compounds administered cautiously, commencing with small doses and only gradually increasing the dosage. The scheme I advise is the result of two or three conversations I have had the privilege of having with Colonel Harrison, to whom I desire gratefully to acknowledge my indebtedness. This consists of a series of courses of sulfarsenol injected subcutaneously, with mercury injected intramuscularly. The first course makes a cautious start with 10 cg. of sulfarsenol, and the dosage is increased, in bi-weekly injections, to 24 cg., the total amount given in the first 54 days being 2·76 g. in 16 injections, with 8 gr. of mercury in eight injections. The reason that the dosage of sulfarsenol in the first course is cautious is that patients with syphilis of the heart or aorta seem easily to be upset at first by arsenobenzol preparations. After the foregoing course of injections, potassium iodide is given for three weeks, to be followed three weeks later by a course of five injections of sulfarsenol and mercury. This time it may be possible to proceed more boldy with the sulfarsenol—three injections of 48 cg. and two of 60 cg. Thereafter the treatment is continued with courses of 10 injections of 5·8 g. sulfarsenol and 10 gr. of mercury at intervals increasing from two to five months, with potassium iodide for a month at a time between the courses. The treatment is continued on these lines for two years. After the completion of this scheme, I suggest a three weeks' course of potassium iodide every two or three months during the rest of the patient's life. This method of treatment applies also to cases of aneurysm. It may be advisable to continue anti-syphilitic treatment as long as the Wassermann is positive even in the absence of other manifestions of active syphilis, for there is a risk of exacerbations all through life, and the small vessels around the principal lesions may become involved. I have been surprised at the frequency with which a positive Wassermann persists even in the case of patients who, from a clinical point of view, have done well.

I would urge the importance of further combined investigation by the clinician and the pathologist of this important subject.

In conclusion, I wish to express my thanks to Prof. H. M. Turnbull for his kindness in discussing with me the pathology of the subject.

ACUTE HÆMORRHAGIC PNEUMONIA OF INFANTS.

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IN an inquiry into the causes, pathology, and treatment of still-birth, Browne[1] in 1921 drew attention to six cases in which death had occurred unexpectedly in apparently healthy infants, and at post-mortem examination the cause of death was found to be hæmorrhage of variable severity into the pulmonary tissues. The age at which death occurred varied from 8 hours to 5 weeks, and in four of the six cases death had taken place quite suddenly. The only symptoms consisted of a brief blanching of the skin and epistaxis. In a later description[2] of the case which lived to the age of 5 weeks, the rapidity of death is well exemplified, for the child was found dead half an hour after the nurse had changed its napkin, and at that time it had appeared quite normal. In the ensuing half hour the nurse had not left the room, nor had the child uttered any sound.

In some of these cases the lungs, or parts of them, were found to be solid with blood, but there was no macroscopic evidence to show that the hæmorrhage was inflammatory in origin. Microscopically the bleeding was found to have taken place within the alveolar septa as well into the alveolar air spaces, and apart from some shedding of the endothelial cells, there was little which definitely pointed to inflammation. In the three cases in which cultures were made, one was sterile, one grew *Bacillus coli*, and *Staphylococcus aureus* was obtained from the third. The case about to be described seems to correspond sufficiently with these cases to merit the same title.

A male child, the eldest of the family and preceded by no miscarriages, was born, ten days premature, to healthy parents both aged 29 years. There was no obvious cause for the prematurity, the labour was easy and instruments were not required. There was no evidence of syphilis in the parents, the father's Wassermann reaction was negative, and there was no family history of hæmophilia. A blood-stained nasal discharge was first noticed 12 hours after birth, and persisted until admission to hospital. For four days after birth the patient vomited after every feed, vomiting occurring about ten minutes after a feed had been taken. The vomited material was not blood-stained.

The infant was admitted to hospital when four days old under the care of Dr. G. F. Still. The patient was then collapsed, pallid, and pulseless, temperature only 96° F. A blood-stained serous discharge was noted from both nostrils, and seemed to impede respiration, for the discharge was snorted from the nose on to the child's jacket. Death occurred within an hour of admission.

Post-mortem Examination.—Premature infant, weight 3 lb. 13 oz. Skull, brain, and meninges normal. Upper air passages contained a little blood-stained froth. On removing the lungs, the upper and lower lobes of the right lung resembled pure blood clots; they were deep purple in colour, solid, of liver-like consistency, fully expanded, completely airless, and sank in water. Most of the right middle lobe was normal, but there were a few small purple and solid areas in it, and two small ephysematous bullæ at its free margin. The upper lobe of the left lung was normal, the lower lobe contained several solid purple patches each as large as a pea. There were no thrombi in the main vessels at the roots of the lungs. Both pleuræ appeared perfectly healthy and were shiny and smooth. The mediastinal lymph glands were normal. Heart normal. Ductus arteriosus patent. Spleen not enlarged, but very engorged and almost black in colour. Liver appeared to be slightly congested. Other viscera normal.

Microscopically, sections from the right lower lobe showed the alveoli and bronchioles to be full of recent blood: the alveolar walls in a few places appeared compressed, but over most of the section they also were distended with blood, and in places there was direct continuity between the blood in the alveolar walls and that within the alveoli. The hæmorrhage had obviously originated from the vesse's within the alveolar walls. The pleura was in places raised

[1] Browne, F. J.: Brit. Med. Jour., 1921, ii., 144.
[2] Browne, F. J.: Ibid., 1922, i., 470.

by blood which had burst through from the underlying alveoli. There was no evidence of catarrh of the alveolar cells, nor was there any invasion of the alveoli with leucocytes. Sections from the left lung showed a patchy distribution of hæmorrhage in the alveoli, and in places these alveoli were partially aerated. The alveolar walls were for the most part compressed, indicating that the blood in the left lung may have been aspirated from the right lung. The left pleura was normal. Sections from the spleen showed marked congestion. The liver and kidneys were to a less degree congested.

Cultures.—Post-mortem cultures were taken from the lower lobe of the right lung and from the spleen. That from the lung grew streptococci, staphylococci, and *Bacillus coli*, while the spleen culture only grew *Staphylococcus aureus.*

In the case just described death was due to the condition of the lungs, and from the microscopical appearances the hæmorrhage must have originated from the pulmonary capillaries, but the underlying cause of the hæmorrhage is not at once obvious. Various explanations may be considered. In the first place, such a hæmorrhage might be asphyxial in origin, being produced at the time of birth. But the labour was easy, forceps were not used, nor was the nasal discharge (which presumably came from the lungs) noticed until some hours after birth. Moreover, the lungs were fully expanded, which suggests that a period of normal respiration preceded the hæmorrhage, and it is most unlikely that such a gross injury to the lung could be survived for four days and yet show no signs of inflammatory change. It would appear most probable that a slight but persistent oozing of blood occurred for three or four days, culminating in a large hæmorrhage which practically drowned the patient. No mechanical cause, such as thrombosis of the pulmonary veins or infarction of a large branch of the pulmonary artery, was discovered, although such a condition might conceivably be of lobar distribution. At autopsy the large vessels at the roots of the lungs contained no blood clot.

Browne explains his cases as the result of infection, producing a rapid turgescence of the pulmonary capillaries which the fragile fœtal vessels are unable to withstand, and which therefore rupture. In one of his cases post-mortem culture was sterile, and in the case here recorded the multiplicity of organisms cultured suggests that they may well have been post-mortem contaminations. Moreover, in this case the history of slight bleeding goes back for four days, and an inflammation of the lungs lasting for that time would be obvious on microscopical examination.

Four of the six cases to which reference has been made were premature infants, and the present case was also premature, so that it is possible that prematurity is a predisposing factor in the condition. Hess,[3] in writing of the pathology of premature infants, states that they are subject to hæmorrhage into the lung parenchyma, with consequent thickening of the alveolar septa, and terminating in an almost complete cessation of the circulation.

Finally, one must consider the condition spoken of as the hæmorrhagic diathesis of the newborn, in which spontaneous bleeding occurs usually from the gastro-intestinal tract and almost always within the first week after birth. In the literature of this subject scanty reference is made to hæmorrhage from the lungs. Von Reuss [4] and Griffith [5] both state that considerable hæmorrhages have been observed in the lungs, but whether these have been associated with hæmorrhages from other parts of the body is not quite clear. In the present case the bleeding was confined to the lungs, and would appear to be an example of a spontaneous hæmorrhage of the newborn occurring in an unusual situation.

I wish to express my thanks to Dr. Still for permitting me to report this case.

[3] Hess, H.: Abt's Pediatrics, ii., 453.
[4] Von Reuss, A. R.: Diseases of the Newborn.
[5] Griffith, J. P. C.: Diseases of Infants and Children.

A CASE OF HEART DISEASE AND EPILEPSY,

WITH A NOTE ON THEIR ASSOCIATION.

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THE following case, which first came under my notice at the Royal Waterloo Hospital some 20 years ago, presents some features of interest.

A. L., married woman; five children; aged 35. No history of fits in the family; father had rheumatic fever.

No history of rheumatism or other serious illness. She had a fit for the first time at the age of 33. She felt quite well prior to the fit and had no more for a year; after that she had four in the succeeding year. When first seen by me at age of 35 she had a definite presystolic murmur at the apex, doubtless of old standing; the heart was well compensated and there were no cardiac symptoms.

In 1908, after being free from fits for 15 months, she had several in the sixth month of pregnancy. After this she had them more frequently, sometimes two or three in a week, but gradually they settled down to an average of about one a month. Almost invariably the fits occurred at night while she was asleep in bed, so that she did not hurt herself except for biting the tongue. There was never an aura. She continued to have fits on an average of 15 a year; sometimes several would occur in a week and then she would be free for a few months. Whenever she omitted taking bromide for any length of time the fits recommenced. For a time I tried digitalis and caffeine, strongly recommended by Lemoine in these cases, but without any particular success.

Hitherto the cardiac condition had given rise to no symptoms, but in 1918 the auricles began to fibrillate. At first there was a slight increase in the frequency of the fits, but soon afterwards they continued much the same as before. At last she began to have definite cardiac symptoms and was particularly troubled with shortness of breath. She responded well, however, to digitalis (tinct. digitalis, ℥xii., t.d.s.) while not discontinuing the bromide entirely, and after a time the fits became less frequent. Sometimes she has several in one night and will then be free for a few months. She was in the National Hospital for Diseases of the Heart in 1922, when the cardiac condition much improved, and again this year, when she was given luminal and tinct. digitalis ℥xx., o.n. In her case, however, luminal does not seem more effective than the bromides. Though the cardiac condition has decidedly lessened her physical activities, she can do a certain amount of house duties. The epileptic condition has apparently left her memory quite unaffected and her mental activity unimpaired.

Epilepsy and heart disease are two such common affections that it is not unlikely that they will sometimes be found in conjunction without there necessarily being any common cause on which they both depend.

In treatises dealing with epilepsy very little is said about any connexion with heart disease. Some writers on epilepsy, such as Binswanger,[1] have denied altogether any causal connexion between heart disease and epilepsy. Stintzing [2] comes to the same conclusion, and their view is apparently shared by other eminent neurologists. On the other hand, Gowers says: "Heart disease often precedes epilepsy and it is often the only ætiological condition to which one can relate the latter," and Mahnert speaks of *Herzepilepsie.*[3] Out of 1070 cases of epilepsy W. P. Spratling found as many as 22 per cent. with cardiac lesions, but he makes no attempt to draw any conclusion as to their relationship; while Dr. Aldren Turner, out of 980 cases of epilepsy, found not more than 1·8 per cent. with a cardiac lesion.

The only way in which epilepsy can affect the heart prejudicially is by causing a temporary cardiac dilatation, and this seems to be very exceptional. A priori it would naturally be supposed that epilepsy

[1] Die Epilepsie, S. 175.
[2] Archiv für Klin. Med., 1899, vol. lxvi.
[3] Wien Med. Woch., 1897, p. 1610.

would have a particularly bad effect upon the heart, and that the violent convulsions would put a considerable strain upon the heart. Setting aside status epilepticus, however, this does not seem to be the case. The cardiac condition of a patient, after having had several fits in a week, has not appeared to me to be materially worse than it was before. On the other hand, that abnormalities of the circulatory system can give rise to epileptiform convulsions there can be no doubt. We know, for instance, that in such conditions as Stokes-Adams's disease, where the bundle of His has been damaged, frequent epileptiform convulsions occur, as they also do in advanced cases of aortic stenosis and even in cases of arterio-sclerosis. But these, of course, are not cases of genuine idiopathic epilepsy, and the question for consideration is whether, when true idiopathic epilepsy is found associated with a valvular lesion of ordinary endocarditis, the association may not be more than an accidental one.

Even if there is no direct causal connexion between epilepsy and heart disease it does not follow that the two diseases are uninfluenced by one another; and, indeed, there seems reason to suppose that epilepsy, when associated with cardiac disease, exhibits some phenomena which are not quite like those of ordinary epilepsy. Thus the classical onset of a fit with a cry, a fall, loss of consciousness, and convulsions is not common with the cardiac epileptics, whose attacks are characterised rather by giddiness, fits of absence of mind, and transient intellectual troubles—in a word, by psychic epilepsy. The aura, too, in these cardiac cases often takes the form of palpitations, precordial pain, the feeling of a wave of blood which rises up into the head, and produces dizziness. As a rule, this condition lasts longer than the ordinary epileptic aura; it develops slowly, giving the patient time to sit down, and at times the aura constitutes the whole of the attack without giving rise to convulsions or loss of consciousness. The fits in cardiac cases are usually infrequent and less severe than in uncomplicated epilepsy. Some of my cases have exhibited circulatory disturbances as an aura, such as palpitations, feeling of numbness in the hands, severe pain in the cardiac region, pulsation of the cervical arteries, sensation of rapid beating of the heart with the face becoming hot prior to the epileptic fit.

Another feature of cardiac epilepsy is that the attacks usually occur at night; this fact has been emphasised by Lemoine,[4] who considers that in mitral cases the attacks are caused by cerebral congestion, and states that they may cease when the patient sits up in bed, whereas in aortic cases the attacks are due to cerebral anæmia and are cut short by the horizontal posture.

Though I have met with a few cases of idiopathic epilepsy associated with aortic regurgitation, the most common cardiac lesion in my experience in this connexion has been mitral stenosis.

It would, perhaps, seem over-fanciful to suggest that in the case above recorded the epileptic seizures were at the outset due to the previously existing mitral stenosis; yet Dr. A. E. Russell, in his most suggestive Goulstonian lecture (1905),[5] considers that there is strong evidence for an epileptic fit owing its origin to some disturbance of the circulation, and regards cerebral anæmia as the fundamental factor which underlies epileptic fits. Gowers, too, adduces cases [6] which present strong evidence of the influence of repeated cardiac syncope in disposing to epilepsy.

[4] Revue de Médecine, 1887.
[5] THE LANCET, 1909, i., 965 and seq.
[6] Borderland of Epilepsy, p. 8.

ROYAL FREE HOSPITAL.—At the festival dinner last week it was reported that 700 patients are treated daily, and Lord Riddell stated that there was an overdraft of £20,000 as well as a large debit balance. An anonymous gift of £5000 was announced, and Lord Riddell added that he would give a similar sum.

THE LOSS OF ORIENTATION IN INSURED WORKMEN:

ITS ECONOMIC ASPECT.

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A MAN after convalescence from the enucleation of an eye is puzzled by a symptom which is new to him. At first it amuses him, and save on inquiry he never mentions it while under examination. He finds on pouring out a cup of tea that instead of the tea falling into the cup much of it falls outside. Briefly, for the time being he has lost the faculty of orientation. When normal binocular vision is present correct orientation is secured by the balanced action of the ocular muscles. But with the loss of an eye and the change to monocular vision the disturbance of the muscular equilibrium is reflected in the temporary arrest of accurate orientation. The duration of the disability is generally a question of age. It usually varies between three and six weeks in young adults. In older men the period is longer.

As a matter of expediency no one-eyed man should be permitted to resume his employment until accurate orientation has been re-established. For example, a bricklayer, unconscious of his mistake, will lay bricks out of line; if he has to ascend or descend a ladder he is liable to make a false step, with the risk of serious consequences. He is aware that something is wrong with his sight, but is naturally ignorant of the cause. Moreover, a man in this condition can become a positive danger to his fellow workmen; if called upon to wield a hammer for the purpose, say, of striking a rivet, the retinal image of the rivet may be displaced while striking the blow, and injury may be inflicted upon the man who is assisting him.

The Position of Insurance Companies.

Two points present themselves for consideration in this connexion. First the economic one, secondly the position in which the insurance companies find themselves. From the economic aspect the workman as long as the loss of orientation continues is confronted with an impairment of his earning capacity, apart from the loss of an eye. He can no more depend upon the accuracy of his work than can his employer. A bricklayer is of no use if he cannot go up or down a ladder without risk, nor is he of any use if he cannot lay bricks in line. What then, under the circumstances, is the position of the insurance companies? Inevitably the weekly wage compensation must be continued until correct orientation has been restored. It must be admitted that the disability has arisen indirectly as the result of an accident in the course of employment.

Cases of the kind are, nevertheless, rare, as experience shows, owing to the gradual recovery from the disability. But that is not all that can be said of the matter. If it should happen that the loss of orientation becomes permanent the insurance company concerned will find itself in an unenviable position. Although the form vision may be adequate for resuming some occupation (and apparently county court judges are satisfied when this amounts to 6/12, with or without correction in the remaining eye), a workman may demand an exorbitant sum for the settlement of his case, and if it be refused, may take his case into court, basing his claim upon the fact that owing to the loss of his eye, a defect has developed in the other one which prevents him from defining objects clearly. He emphasises that an object at first appears to him plain and distinct, but afterwards becomes blurred and unsteady. Consequently he is unable to define clearly, for example,

the markings on a measuring gauge. With such a complaint the court is at once impressed in his favour and the difficulty arises of finding an answer to the question for what kind of work is such a man fitted, having due regard to his possible earning capacity. The judge requires to be satisfied on this point; he weighs the suggestions placed before him, and if he rejects them as being against the man's interests, the workman may become a pensioner for life of the insurance company concerned. It is true that the company has the power of reopening the case should it be found that the man is afterwards capable of undertaking remunerative employment. But there is little inducement for him to imperil an arrangement so greatly in his favour. Some workmen on the dole will not work if they can live without doing so. Similarly, an elderly man, with only one eye and a loss of orientation which has become permanent, is well aware that the labour market is practically closed to him.

Uniocular Heterophoria.

Loss of orientation, or heterophoria, in an insured workman with only one eye cannot be excluded as a factor of importance under the Workmen's Compensation Act. If permanent as a disability, revealed by the accident, it adds to the claim in the settlement for the loss of an eye, inasmuch as it reduces the working capacity and the earning capacity of the workman concerned, apart from the abolition of binocular vision.

The conditions under which it may assume a permanent form may now be considered. While binocular vision is present heterophoria in one eye commonly exists as a latent form of disturbance of muscular equilibrium such as occurs in anisometropia, where the refraction in one eye is better than that in the other. In a general sense, the better eye becomes the working eye while the more defective one functions in a state of latent heterophoria, without, however, causing any disturbance to the vision. When, on the other hand, the working eye has been removed, with abolition of binocular vision, the latent heterophoria in the remaining eye becomes manifest with the consequent loss of the power of accurate fixation, and the possible continuance of this as a permanent defect. In all cases in which a workman loses an eye in the course of his employment this contingency arises, and the only consolation to be derived from its consideration is the rarity of its occurrence.

Subjoined are the brief notes of a case in point.

A boilermaker, aged 61, in September, 1923, lost his right eye through the penetration of a piece of steel. When seen in January, 1925, four months later, the vision of the left eye was 6/24, improved to 6/12 nearly, with +0·75 cyl. and +1 sph. Orientation was still unrestored. On Nov. 21st, 1925, he was seen again. About a week previously he had resumed work as a "plater's labourer." This required him to hammer in rivets. With the first use of the hammer he hit a man on the head, rendering him unconscious He ascribed the accident to his vision becoming hazy, so that he failed to see the rivet clearly. The orientation was still defective, although he admitted that a 2° prism base outwards enabled him to see more clearly. After this he ceased to do any work. He was seen for the third time on Oct. 5th, 1925. There was no change in the condition, and on Jan. 22nd, 1926, the case was taken into the county court with the result that the man became a pensioner for life of the insurance company concerned.

WORKHOUSE STATISTICS. — Information recently elicited from the Minister of Health in the House of Commons shows that the average number of persons maintained in workhouses in England and Wales was slightly smaller in the year 1924–25 than in the previous year. The figure for 1923–24 was 207,346, and that for 1925 204,895. On Jan. 1st last 154,500 adults and 52,000 children under 16 years of age were being maintained in the various classes of Poor-law institutions in England and Wales. The average weekly cost per person maintained was 25*s.* 5*d.* in the year 1923–24 and 27*s.* 1½*d.* in the year 1924–25. The total expenditure in connexion with the institutions was £13,735,923 during the year 1923–24 and £14,494,451 during the year 1924–25.

Medical Societies.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

The Health of the Professional Woman.

A MEETING of this Association was held on June 8th at the house of the British Medical Association, Dr. CHRISTINE MURRELL, the President, being in the chair.

Dr. LETITIA FAIRFIELD gave an address on the Health of the Professional Woman, which was published in full in THE LANCET of July 3rd. A discussion followed the paper.

Dr. ELEANOR LOWRY suggested that the occupational laryngitis might be caused by: 1. Bad voice production. 2. Sinus trouble. 3. Excessive smoking.

Dr. JUSTINA WILSON, from her experience of the National Hospital for Diseases of the Heart, confirmed the much greater incidence of rheumatic heart disease in women. Heart disease following influenza appeared to be very deadly to the heart muscle.

Dr. MARY KIDD agreed that vegetables rather than fruit were needed to prevent constipation. It was unfortunate that vegetables were so expensive nowadays, and also that considerable time had to be spent in cleaning and cooking them which the woman worker living alone could ill afford.

Dr. RUTH VERNEY deplored the lack of cheap institutions to which functional nervous disease cases could be sent, since many of these cases could only be treated away from the home circumstances which might have contributed to cause the breakdown.

Dr. MINA DOBBIE said that practitioners ought to inquire how working women spent their leisure and holidays; often it was found that they looked after aged relatives from a sense of duty and were quite grateful to practitioners who forbade them to do so.

Dr. E. L. ROBERTS suggested that a possible cause of neurosis in elderly teachers was a sense of failure in not having advanced further in their profession and a lack of anything to look forward to.

Dr. C. M. PEAKE pointed out that the effects of the menopause might not be immediate—for example, flushings could occur long after the actual cessation of menstruation.

Dr. A. SHEPPARD thought that in some of the banks compulsory retiring age for women was as early as 45.

The PRESIDENT pointed out that the other duties outside work performed by most professional women would account for some of the excess of functional nervous disease. Neurasthenia in her opinion was always the result of emotional overstrain. There was a need for well-run nursing homes in psychological institutions where the practitioner could continue to treat the patient.—Dr. FAIRFIELD briefly replied.

A social meeting of the Association was held at the same place on June 18th, the PRESIDENT in the chair.

A lecture, illustrated by lantern slides, was given by Sir JAMES BERRY on the subject of

Greek Temples in Sicily,

which Lady BERRY followed up by reminiscences of travel in many lands.

Sir JAMES BERRY dealt in the first place with the historical side of his subject, sketching the main events which led to the formation of the colonies of "Magna Graeca" in Southern Italy and Sicily. He then passed on to a consideration of the architecture of Greek temples in general, their arrangement, the modifications which they underwent during the development of Greek culture, the influence of the earlier architecture of Egypt and the subsequent fate of the erections. In an enlightening series of slides showing reconstructions of temples, temples in process of building, and the quarries from which the stone was hewn, the methods employed by the Greeks in fashioning and erecting such vast stone edifices were exemplified and made clear.

Lady BERRY then showed a series of photographs which she had made during various holidays abroad

Reviews and Notices of Books.

ARTIFICIAL SUNLIGHT THERAPY.

Artificial Sunlight and Its Therapeutic Uses. By FRANCIS HOWARD HUMPHRIS, M.D. Brux., F.R.C.P. Edin., Hon. Consulting X Ray Physician to the American Hospital in London and to Christ's Hospital. London: Humphrey Milford, Oxford University Press. 1926. Pp. 236+xx. 8*s.* 6*d.*

Les Rayons Ultra-Violets en Thérapeutique. By Dr. SAIDMAN. Paris: Octave Doin. 1925. Pp. 580. Fr.65.

THE third edition of Dr. Humphris's book on the therapeutic uses of artificial sunlight has been enriched by numerous illustrations, the most attractive of which is the one forming the frontispiece and which represents Akhnaton with his wife Nefertiti at worship in the radiance of the beneficent sun. The volume contains a great deal of information which can be put to immediate use by those wishing to carry out this form of therapy. The author is more convincing when he treats of the practical application of artificial light therapy than when he enters upon biophysical ground. We can hardly expect agreement yet upon the essential processes set going by ultra-violet radiation. Dr. Humphris tells us that the calcium content of the blood is increased by exposure to these rays; but the data given on p. 69 are hardly sufficient to support this statement. They show the percentage change of calcium of the serum of rachitic children before and after exposure to light in seven cases. In two there is a fall of the calcium content and in three others the increases are only 2, 5½, and 5¼ per cent. respectively. If it be a fact, it should be possible to find more convincing evidence of it. Exactly what are the main changes brought about time and experimental work will show; Dr. Saidman, for one, will have none of the usually ascribed chemical actions as even mainly contributory. For him and others of his school the photo-electrical effect of the rays is all sufficient. With this well-known phenomenon in mind, he would be bold who would yet claim to have found any rational explanation of the remarkable therapeutic changes brought about by ultra-violet rays which are enumerated by Dr. Humphris on p. 80 of this edition. The book retains the useful features on which we have previously commented and will continue to be popular among the swiftly increasing group of practitioners who have added artificial light apparatus to their armamentarium.

Dr. Saidman's book is divided into three parts. The first is concerned with technical matters and contains a good account of the sources of ultra-violet rays, how they are used, and what precautions are necessary in their medical application. The second part is devoted to the physiological action of these rays and, as a prelude to this study, some account is given of the process of absorption of the rays by different media and the phenomena of photo-electricity. This second section of the book gives one of the best accounts which we have seen of the facts which have so far been obtained upon the physiological reactions consequent upon irradiation by light and ultra-violet rays. The third section of the book is devoted to therapy, and is divided into three parts dealing with the use of ultra-violet rays in surgery, in medicine, and in diseases of children. Then follow an extensive bibliography and a series of spectra relating to subjects discussed in the text.

We think it unfortunate that the author pins his faith so exclusively upon a photo-electric explanation of all the complex effects in living things which follow upon ultra-violet exposure. No doubt it plays some part in some of the processes, but there is so little direct experimental work in support of the theory that it would seem better to keep an open mind on the subject, rather than to reject summarily other facts which may bear upon the vital processes which are quickened so amazingly by judicious exposure to the rays. On the whole, however, we can recommend the book to readers who wish to extend their knowledge of the subject.

INDIAN HYGIENE AND PUBLIC HEALTH.

By Lieut.-Colonel C. L. DUNN, D.P.H., I.M.S., Director of Public Health, United Provinces; and RAI BAHADUR D. D. PANDYA, D.P.H., Director of Provincial Hygiene Institute, United Provinces. Calcutta and London: Butterworth and Co, Ltd. 1925. Pp. 679. 22*s.*

THIS volume is intended to serve as a text-book for candidates for diplomas in public health in India and especially for those studying in the United Provinces. Although its matter is definitely related to the public health problems of India, its form follows closely the English text-books. Chapters are devoted to water-supplies, ventilation, disposal of refuse and excreta, building sites, food, communicable diseases, disinfection, housing and town-planning, personal hygiene, school hygiene, meteorology, vital statistics, and sanitary law. Six appendices contain physical data and other facts of practical utility to the sanitarian. There are numerous and elaborate illustrations, and the authors have spared no pains in supplying their readers with information.

The publication of this book and another recently reviewed in these columns may be taken as a measure of present-day public health activity in India. It may be necessary to feed the mind of the student trained in India with potted knowledge—probably no one knows this better than Colonel Dunn or his collaborator—but we think the authors sometimes fail by trying to convey too much, thus not leaving space which might well have been employed otherwise. For instance, the time-honoured calculations of respiratory impurity and standards of ventilation might have been omitted in the light of modern work and, instead, some mention made of the kata-thermometer. The absence of reference to accessory food substances is unfortunate, and the description of the causation of beri-beri and pellagra is inadequate. Indeed, the physiological outlook which is gradually removing the hygienists from the thraldom of the sanitary engineer is not markedly exhibited by the authors of this book. We look in vain, too, for the elucidation of such questions as the reputed prevalence of non-pulmonary tuberculosis among some groups of Indians whose milk is mainly derived from buffaloes. Nothing is said as to the prevalence of tubercle in the latter.

While this volume is disappointing in the respects indicated, it contains a mass of facts that will be of great value to the administrator, for they are well put together and indexed, while the work is produced at a very reasonable price.

NEUROLOGY.

Contribution à l'Étude des Paraplégies Pottiques. Essai sur l'Évolution et le Prognostic; basé sur 40 Observations Personelles. By Mme. le Dr. SORREL-DEJERINE, Ancien Interne des Hôpitaux de Paris. Paris: Masson et Cie. 1926. With 97 illustrations. Pp. 399. Fr.40.

Pott's disease of the spine is a condition which is possibly not so frequent as it used to be; it is a clinical "uncommonplace," but its most suitable treatment still remains sub judice. Its varieties and its pathology, in children and in adults, are curiously variable, as are its course and termination. Some cases are favourable from the outset, others the reverse. The daughter of the late Prof. Dejerine, impressed by these facts, has made in the book under review a noteworthy contribution to the subject, based on abundant clinico-pathological material, and has reached conclusions which may be summarised as follows. There are three chief varieties: (1) a

transient form, with paraplegia, clearing up in a few weeks without complications; (2) a form curable in from 18 months to two years; (3) a variety which pursues a chronic course. The prognosis in a given case depends on the following points: the condition is probably curable if the paraplegia appears early, develops rapidly, and reaches its maximum quickly, even though that be a complete paraplegia. Such cases are caused by abscess formation within the spinal canal. Those with slow development and slow progression, even if incomplete, are due commonly to pachymeningitis or to vascular changes in the cord, the result of severe or prolonged compression, and are distinctly less favourable. Contrary to a widely held view, Mme. Sorrel-Dejerine considers that cure can be obtained as satisfactorily in adult as in juvenile cases, and that age is not a factor that has prognostic significance. The monograph is well documented and illustrated, and is worthy of attention on the part of both neurologist and surgeon.

Diseases of the Nervous System. By H. CAMPBELL THOMSON, M.D., F.R.C.P., Consulting Physician to the Department for Nervous Diseases, and Emeritus Lecturer on Neurology, Middlesex Hospital, &c.; and GEORGE RIDDOCH, M.D., F.R.C.P., Assistant Physician to the London Hospital and to the National Hospital, Queen-square. Fourth edition, revised. London: Cassell and Co. 1926. Pp. 541. 16*s.*

THE fourth edition of this text-book appears with the additional name of Dr. George Riddoch as a joint author. On previous occasions we have cordially recommended its usefulness for senior students and for practitioners of medicine, since it aims at marshalling the main facts of neurology in a concise and lucid manner, avoiding minutiæ and controversial topics to a large extent, and presenting the subject-matter dogmatically rather than critically. The continued demand for the book is evidence of its practical merits. In its new edition the authors have succeeded in preventing the loss of its "manual" character by removing obsolete and redundant material, so that the volume is no larger than before, although it comprises a considerable amount of new data. It will without doubt receive continuing appreciation by those for whom it is intended.

Pathologie du Cerveau et du Cervelet. (Fascicule XIX. of the Nouveau Traité de Medécine, edited by MM. G. H. ROGER, F. WIDAL, and P. J. TEISSIER). By Various Authors. Paris: Masson et Cie. 1925. Pp. 1016. Fr.80.

THIS handsome volume of over a thousand pages is devoted not to neuropathology alone, in the strict sense, though the pathological descriptions are voluminous and accurate, but also to the clinical and semiological sides of the topics with which it deals. These include cortical syndromes, sub-cortical syndromes, cerebral tumours, cerebral syphilis, vascular disorders, infantile encephalopathies, cere bellar and labyrinthine syndromes—in short, a fairly complete compendium of brain symptomatology and pathology. Among the authors are many whose names are well known beyond the limits of the neurological schools of France. Glancing through these finely illustrated pages, we realise afresh that this is the sort of thing the French do extremely well. They are masters of the clinico-anatomical method. Their knowledge is based on the collocation of clinical with pathological material, so that in their descriptions one seems to pass naturally from the former aspect to the latter, with the feeling that all has been duly correlated and explained. Nevertheless the weakness of the method is here also exemplified, if only in a negative way, for the problems of pathogenesis of symptoms are not always seriously tackled, and in some instances appear to be altogether omitted. Between the commonplace clinical manifestations of athetosis, for example, and the fairly well-defined pathological lesions prone to be associated with it, lies the field of interpretation of the symptom as the expression of the action of living physiological mechanisms—a question that obviously cannot be solved by mere consideration of dead material under the microscope. This is the side of neurology that has not been so well developed by the French as by some other schools, a contention which is apparent if this volume be scanned critically. However this may be, our appreciation of the high standard of the contributions in the book is not thereby diminished; its presentment of cerebral and cerebellar syndromes is admirably lucid and comprehensive.

X RAYS AND PERIPHERAL CIRCULATION.

Die Peripheren Blutgefässe im Röntgenbild. By Dr. S. HIRSCH, Senior Int. Physician, Sandhof, Frankfurt a.M. Frankfurt a.M.: Kein and Nemnich. 1924. Pp. 72. M.6.90.

THE possibility of demonstrating the peripheral circulation in the living subject by opaque injections into veins has aroused much interest among radiologists, but the work has not been followed up in this country. This interesting monograph gives an account of the technique and possibilities of the method, based on the author's original experiments. In over a hundred cases a few c.cm. of a 10 per cent. solution of strontium bromide have been injected into living subjects without ill effect. The method is only applicable to limbs, in which the circulation can be stopped by compression. The work is in the experimental stage and has not as yet been turned to practical account in the study of disease, but the photographs convincingly demonstrate its possibilities. The monograph also contains detailed information on injection masses and solutions suitable for X ray investigation of anatomical specimens and for the study of the circulation of animals by the injection of opaque substances. This information should be of value to anatomists and experimental physiologists and pathologists.

OVERPOPULATION.

Theory and Statistics. By P. SARGANT FLORENCE. London: Kegan Paul. 1926. Pp. 66. 2*s.* 6*d.*

THIS little book, which is a recent addition to the "Psyche" miniature series, is a restatement—based upon a simultaneous consideration of history, theory, and statistics in the light of the economic developments and new social practices of the last century—of the position of Malthus. The events of the last hundred years have been held by many to refute this writer's more salient arguments. This refutation, Mr. Florence contends, results from a misrepresentation of what, in effect Malthus, in his later writings especially, actually said, and upon a dissociation of historical, theoretical, and statistical lines of argument which, in Malthus's writings, were combined. Malthus's three cardinal propositions are distinctly enunciated, and attention is directed to misinterpretations of his views arising from failure to differentiate the last two of these propositions.

Origins of variation in the birth-rate are then considered, and it is argued that the recent fall in the birth-rate manifest among the well-to-do is attributable to the introduction of contraceptive methods, and not to cyclical variations in fecundity such as were observed over short-term periods in the second half of the last century. Mr. Florence further argues that the *sustained* magnitude of our post-war unemployment figures expresses more than a cyclical variation in trade, such as the one that appeared so ephemerally in 1879. It would appear, in fact, to represent a growing margin of unemployed over and above these cyclical variations, which may testify to a more chronic state of overpopulation. The book ends with an attack on the view that we are justified in adopting a "laissez-faire" attitude towards problems of population, certain recent pronouncements notwithstanding. If we choose to say that the growth of a given population

is a "biologically self-regulating process," as has of late been authoritatively stated, we are not to suppose that the actual mode of the self-regulation is either immaterial or beyond our control. Deliberate regulation of births by human beings is capable of entering into the process as intimately as does the fortuitous multiplication occurring in communities that suffer from high birth- and death-rates.

Though short, this book is closely written and closely reasoned. At times, especially in the second chapter, the literary style is too involved to make easy reading, and in one sentence in the middle of page 10 sustained contemplation has failed to reveal a meaning. But the book contains some interesting statistics, and its conclusion that population cannot safely be ignored, in the belief that it will regulate itself to our convenience, is important.

EAR, NOSE, AND THROAT THERAPY.

Handbuch der Hals-Nasen-Ohren-Heilkunde. Edited by A. DENKER and O. KAHLER. Second volume. Diseases of the Air Passages and Mouth, II. Berlin: Julius Springer; Munich: J. F. Bergmann. 1926. Pp. 1068.

THIS is the second volume of a very large text-book which, when completed, will consist of nine volumes. The first five are to deal with the mouth cavity and upper air passages, and the rest with the ear. The first volume, which has already received notice in these columns, was devoted to the anatomy, histology, physiology, and methods of examination of the upper air passages. The volume under review is concerned with ætiology and pathology, and in the first 353 pages these subjects are considered generally. This is the least satisfactory part of the book, being composed largely of vague generalisations. Such factors as climate, age, or injury could be considered under the separate diseases of the parts in question more usefully than by a discussion of their effects on the air passages in general; and the same criticism applies to the chapters on general symptomatology. The section on general therapy is far more useful, and includes accounts of general and of local anæsthesia. Methods of local therapy for the nose and throat are well described, but it is not clear why the operation of tracheotomy should be placed here rather than in a later volume with other operations on the larynx and trachea. After these generalities we reach the beginning of the descriptions of special diseases which will occupy the rest of the five volumes dealing with the upper air passages. First come malformations of the nose, throat, including palate, lips and tongue, larynx and trachea; this chapter describes, in addition to the well-known deformities, some interesting cases of rare malformations. The remainder of the volume is occupied with the nasal septum, acute and chronic rhinitis, and diseases of the nasal accessory sinuses. It will be noticed that the work is arranged on a general, not a regional classification; deformities of the nose, throat, and larynx come into this volume, foreign bodies in all these regions into Vol. III., tuberculosis in Vol. IV., and tumours in Vol. V. In the present volume the various chapters are in the hands of acknowledged authorities; they are well written, well illustrated where illustrations are required, and are thorough and complete. The second volume is a worthy companion to the first, and the two make a good beginning to what seems likely to be a great work.

DISEASES OF THE MOUTH, AND OTHER REGIONS.

Non-Surgical Treatment of Diseases of the Mouth, Throat, Nose, Ear, and Eye. By THOMAS H. ODENEAL, M.D., Otologist, Rhinologist, Laryngologist, and Ophthalmologist to the Beverly Hospital, Massachusetts. London: H. K. Lewis and Co. 1926. Pp. 428. 17*s.*

THIS is an attempt to describe the diagnosis and treatment of the diseases of all the special regions enumerated in the title in such a way as to be "of material assistance to the young specialist and to the general practitioner." Unfortunately, the attempt cannot be said to have succeeded, though there is plenty of sound advice scattered through these pages, and though the dogmatic tone of the author is proper in so concise a book, the treatment throughout is described in too short and summary a manner to be of any real value to the general practitioner, still less to the young specialist. To take one instance out of very many, it is not worth while to mention salivary calculi at all when the only thing said is that "calculi in these ducts or glands give the patient a sense of a foreign body or a lump in the floor of the mouth"; nothing is said about their treatment. If the short notes on rare conditions, such as Thornwald's disease and laryngocele, had been omitted, more space might have been found for discussion of the commoner and more important affections. The writing might have been more carefully revised; the recommendation of 30 per cent. carbolic acid in glycerine as ear-drops, which is mentioned twice, is surely intended for 30 gr. to the ounce; for this purpose carbolic acid is seldom used at more than the latter concentration.

BODILY FUNCTION FOR THE LAYMAN.

Sex and the Young. Pp. 190. 6*s.* 6*d.* *The Human Body and its Functions.* Pp. 224. 6*s.* 6*d.* Both by MARIE C. STOPES, D.Sc. London: Gill Publishing Co. 1926.

THOSE who are not irritated by Mrs. Stopes's manner of imparting knowledge will find a great deal of good sympathetic common sense in her contribution to the question of how to teach children about sex. It is a matter which has been much discussed in recent years and extravagant opinions one way and the other have not been wanting. A while ago there was a rather widespread idea that children ought to be taught about sex as such. Practical experience has, we believe, led some of the advocates of direct instruction to change their minds, and Mrs. Stopes takes a strong line against this special treatment of a subject which does not occupy the predominant place in the consciousness of children that it is apt to have in adults. Sex, she says, should not be taught; children should rather learn it in the ordinary course of learning the elementary anatomy and physiology which she would have everyone know about at an early age, and they will regard it as just as commonplace—or just as miraculous—as the heart or the bowels. To provide her ideal introduction to the functions of the body, she has written the Human Body and its Functions as a companion volume. All of which is as sane and reasonable as her remarks on the real necessity of allowing school-children plenty of time in the morning to get into a regular habit of opening their bowels, or the disadvantage of making a boy conspicuous by a complete rather than a partial circumcision, or the desirability of having a larger proportion of married teachers and various other similar topics, some of them of the beastly kind which do not often get such frank treatment. We have less sympathy with her suggestion that THE LANCET should be taken in the school staff library, nor are Bayliss's "General Physiology" or Marshall's "Physiology of Reproduction" quite the books to recommend to relatively untrained lay people.

The Human Body and its Functions contains 22 chapters wherein more attention is paid to function than to details of structure, and function of the systems and organs of the body are discussed in sufficient detail. Some would prefer a more objective account to be given to children and young people, without comments pointing the moral—for example, that it is "wickedly cruel to leave a baby in a perambulator with the hood over it in such a way that the glare of the sky goes straight into the baby's eyes." Others may welcome a book which combines instruction in anatomy, physiology, principles of hygiene, and with hints as to conduct. The book is well produced and the illustrations are clear.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives health statistics for 1925 from six districts of varying type. A high birth-rate, usual in colliery districts, will be noted in Doncaster and may be compared with that of Swinton, on the Lancashire coal-field, where, in addition to 3710 males engaged in mining and allied occupations, there are 3918 textile workers (877 males and 3071 females).

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.	
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Heart disease.	Infant mortality.	Maternal mort. from childbirth.
Sunderland C.B.	166,000	24·7	15·3	1·52	1·07	3·7	2·9*	118	3·9
Stockport C.B. .	125,900	16·5	13·9	1·03	1·45	3·3	2·6*	97	2·9
Bootle C.B. ..	83,260	23·3	13·1	1·59	1·13	2·9	0·8	97	2·6
Doncaster R.D..	33,910	33·6	10·7	1·00	1·00	2·4	0·9	79	0·0
Swinton and Pendlebury U.D... ..	33,400	14·7	10·3	0·72	1·11	2·5	1·0	72	6·0
Stafford B. ..	29,030	16·7	9·3	1·10	0·93	2·0	1·0	51	2·0

* Diseases of circulatory system, excluding cerebral hæmorrhage.
C.B. = County borough. R.D. = Rural district. U.D. = Urban district. B. = Borough.

Sunderland.

Owing to the recent death of Dr. H. Renney, Dr. Eustace Thorpe, temporary medical officer of health, submits the annual report, which was revised by Dr. Renney before his death.

The water-supply of Sunderland is derived from deep wells in the magnesian limestone. During 1925 bacteriological examination resulted in the finding of *B. coli*, in 100 c.cm., in more than 40 per cent. of 212 samples examined. The comment is made that its presence "is no doubt due to the deposit of manure, droppings of cattle and sheep, and of night soil used by the farmers as a land fertiliser. The bacilli, washed out of these deposits by the rainfall, are carried through the subsoil and thence by cracks in the clay and fissures in the limestone to the wells sunk in these strata." Sunderland is now almost a water-carriage town, the 1226 remaining conservancy closets being of the small covered-in type, commonly known as ash closets. The housing shortage is still urgent, and innumerable instances are known "of families of seven or more living in one room and of five or more of such families living in one house with conveniences for one family only." A further 3000 houses are required, all of a working-class type, and representations have been made with regard to three unhealthy areas. Out of 106 samples of milk examined five were found to contain living tubercle bacilli. Four of the farms, situated outside the borough, were visited by the veterinary surgeon and in each case a written undertaking was received from the farmer that he would not send milk from the suspicious cows into the borough for sale. In one case the county M.O.H. was notified. At the fifth farm, situated within the borough, three suspicious cows were found, and one was slaughtered, compensation being paid. Three cases of small-pox were notified, and 31 cases of encephalitis lethargica, in 27 of which the diagnosis was confirmed. During the year 11 mothers received antenatal treatment for syphilis, and the eight infants born to them were quite healthy. Ultra-violet rays have been used at the infirmary for rickets, but it is felt that this treatment can only be carried out satisfactory at the centres owing to the difficulty of ensuring regular attendance. In March a scheme for antenatal visitation by the midwives was begun on the basis of a payment of 2*s.* per case for satisfactory work. During the year 66 cases of ophthalmia neonatorum were notified; one baby became blind and two had one eye damaged. Appreciation is expressed of the Eye Infirmary's treatment of these cases, but unfortunately it has not yet been possible to arrange for a ward to which such babies can be admitted as in-patients. At the municipal hospitals a bed isolation ward has been successfully used for treating simultaneously many different diseases without the occurrence of cross-infection.

Stockport.

Dr. A. G. Jenner died last October and the deputy medical officer of health, Dr. H. Richmond, submits the report. The number of new houses erected was 405, as compared with 241 in the previous year, and at the end of the year there were 204 in course of erection. Nevertheless, there is still not enough housing accommodation of the smaller type. Early in the year an arrangement was made with the Stockport Infirmary for the treatment of infantile paralysis, tuberculous bones and joints, rickets, congenital defects, and injuries. The orthopædic centre formed is in charge of Mr. E. S. Brentnall, and a trained masseuse is in attendance. During the last six months of the year 48 cases were treated, 24 X ray examinations were made, and eight cases were admitted as in-patients. There were also 151 attendances for massage and 387 for medical exercises. The cost of surgical appliances in connexion with the scheme is borne by the estate of the late Miss Maria Leigh. The arrangement has still to receive the approval of the Ministry of Health. It is remarked that of 130 fatal cases of tuberculosis, 20 had not been notified at the time of death.

Bootle.

Dr. F. T. H. Wood reports that an apparatus for ultra-violet light treatment was installed at Linacre Isolation Hospital in October, 1925. Antenatal clinics have established themselves in the public mind, and during 1925 about 1 in 4 of the expectant mothers came for examination and advice. The close association between the clinics and the maternity home, and, through the consulting gynæcologist, with the Liverpool special hospitals, adds much to their value. During the year 128 patients were admitted to the maternity home. There were no maternal deaths, three children were stillborn and three died of debility within ten days. One case of ophthalmia neonatorum occurred which was transferred to the Liverpool Eye Hospital and there cured. All the mothers left the institution breast-feeding their babies, except three, who had mastitis. As regards the health of infants generally, Dr. Wood points out that, although intestinal diseases have almost disappeared as a cause of death, no real improvement can be recorded in respiratory diseases, and that the deaths of infants in the first month remain as numerous as they were 20 or 30 years ago. He gives a table showing that the neonatal death-rates during the last four quinquennia were 36·7, 41·5, 31·5, and 34·6 per 1000 births respectively.

The milk-supply is unsatisfactory and "remains demonstrably dirty," and the general public is unwilling to encourage improvement by recognising that difference in quality implies difference in price. Out of 28 samples examined, one reached the standard of Certified milk, two of Grade A milk, and one half were grossly contaminated. Two of the 28 contained tubercle bacilli. In July the isolation hospital decided to purchase Certified milk and similar action was urged upon the management of the Bootle Borough Hospital. A number of local distributors have begun to supply bottled milk without complying with any of the regulations for designated milk. This milk is the ordinary unsatisfactory milk and the imperfect arrangements for sterilising the bottles have probably

rather increased than decreased the chances of contamination. In confirmation, it is pointed out that the dirtiest of the 28 samples examined was a bottled milk of this type and that five other samples of such bottled milk occupied very unfavourable positions in the list. Of 49 milk samples taken at the railway stations no less than 11 contained added water, varying in amount from 2·5 to 29 per cent.

The Schick test has been used for scarlet fever admissions to hospital. It was found that 15 out of 19 children under 5 gave positive reactions; 18 out of 43 at the age-period 5 to 10; 5 out of 16 at ages 10 to 15; 2 out of 4 at age-period 15 to 20; and 1 out of 4 at ages over 20. Only one of seven new probationer nurses gave a positive reaction, and she was immunised. One midwife was reported to the Central Midwives Board during the year for failing to notify a case of ophthalmia neonatorum, and her name was removed from the roll. The case in question came under treatment when 15 days old, and the results were very serious. Some improvement in housing has been brought about by the erection during the year of 98 houses of site No. 1. There is still much need for more municipal building, for there is much overcrowding.

Doncaster R.D.

Dr. A. B. Dunne laments the spoiling of his beautiful district by industrial invasion with its pillars of smoke by day, but no doubt derives satisfaction from the fact that the industrial communities are the best housed in it. Out of 37 parishes about 6 have been converted from agricultural to industrial communities. When the projected colliery in Awkley parish has been sunk the inner ring of collieries surrounding Doncaster will be complete. "The standard of living is high and there is an appearance of well-being and prosperity about the colliery villages." Since the war a large glass industry has been established at the old village of Kirksandall, up to which point the river Don is tidal. As predicted in 1911 by the late Mr. W. H. Pickering, H.M. Inspector of Mines, districts in the Dearne Valley and in Askern have been flooded by subsidence. During the last five years the colliery companies and glass manufacturers have erected over 2000 excellent houses on town-planning lines. The change over from rural conditions has meant a tremendous influx of children for whose accommodation large schools on modern lines have been built. The industrialised districts are provided with modern sewage disposal works. There is no maternity hospital in the district, but difficult cases have until now received attention at the Doncaster Royal Infirmary. Recently the county council have arranged for the admission of special cases to a private maternity home. There are sufficient midwives, but they are somewhat unevenly distributed. Dr. Dunne reports that "a healthy public opinion regarding child welfare is being formed." During the last five years there have been 13 cases of enteric fever with 3 deaths, 6 cases of puerperal fever with 3 deaths, 16 cases of ophthalmia neonatorum with 2 deaths and no impairment of vision among survivors, and 2 cases of encephalitis lethargica with 1 death.

Swinton and Pendlebury U.D.

Dr. H. C. Mulholland reports a gradual improvement in the milk-supply of the district, but also mentions that some milk sold in bottles is no better than any other. He looks to public opinion to secure a higher standard of cleanliness in milk and food matters. Flooding of part of the area has occurred through the subsidence of sewers from mining operations, and is being dealt with by reconstruction of the sewers. A nuisance has been caused by the refuse tip and a salvage plant is to be erected to deal with all the refuse. In the last quarter of the year there was an outbreak of typhoid fever, consisting of six cases in one house. The origin was a missed case, a man of dirty habits, but it could not be ascertained how he had contracted the disease. Housing shortage is considerable, and 51 cases of gross overcrowding were reported during the year. The number of persons living more than two to a room increased from 2344 in 1911 to 3165 in 1921. Since 1921 the Council has built 230 houses under the Addison scheme and 208 have been put up by private enterprise under the subsidy scheme. Negotiations are in progress for the purchase of two estates, of 16½ and 63 acres, for further housing. Unhealthy areas, including 274 houses and housing 1428 persons, are waiting to be dealt with. Dr. Mulholland insists on the need for reinspection of houses which have been rendered fit, in order to prevent damage by careless tenants, as in certain cases renovation has had to be repeated within two years.

Stafford.

Dr. J. T. Macnab reports that two milk producers have been induced to supply Grade A milk and that the corporation has supported them by purchasing this milk for the child welfare centre and the isolation hospital. Housing conditions have been improved, but Dr. Macnab estimates that another 200 houses are needed at present. The corporation has purchased more land and contemplates the erection of 140 houses thereon. There are still houses in the borough with no sinks and without an inside water-supply. A matter requiring attention is the abolition of the slop-water closets. Two men are kept constantly employed in dealing with stoppages in them. They number 2283.

SCHOOL MEDICAL SERVICE.

IN the following table the figures given in the reports from Gillingham, Bootle, and Leeds are set out.

Name of town.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Gillingham .	7,440	6,775	2,498	1,306	16·0
Bootle . ..	12,176	10,887	3,831	11,405	32·3
Leeds.. ..	71,920	—†	21,512	62,830	26·4

* Excluding uncleanliness and dental defects. † Not given.

Gillingham.

Dr. W. A. Muir, M.O.H. and S.M.O., in introducing his report, discusses the prevention of mental deficiency and briefly states his views that sterilisation in selected cases, combined with segregation, would go far towards reducing the number of cases. Whether this is true or not there is little doubt that many of the feeble-minded are enabled to become wage-earners by suitable training in special schools and institutions. Such accommodation is far from adequate throughout the country, and in Gillingham alone there are 24 known mentally defective children in elementary schools. The fight against uncleanliness continues to absorb much of the time and energy of the staff, and Dr. Muir sounds a warning note about the still high percentage of verminous children (16 per cent.). The evil effects of dust, both from the economic and the medical point of view, are well known, and many areas have had good results from applying dust-allaying preparations in their schools. Such an experiment is being tried in three of the Gillingham schools. An orthopædic scheme is under consideration and may soon be working. Open-air classes are held in a few schools. The net cost to the ratepayers for the school medical service during 1925 was ¾*d.* in the £.

Bootle.

Dr. F. T. H. Wood presents his usual interesting and well-arranged report. He is fortunate in his committee and draws attention to the great help he has received from them. The cost per child was about 4*s.* 9*d.* gross and 2*s.* 4*d.* net, this being a decimal part of a penny rate (1·3 gross and 0·65 net). During

the year there has been a slight rise in the malnutrition figure, from 5·9 to 6·1 per cent. The assessment of malnutrition, however, is so dependent on the personal factor that changes in the examining officer will vary the figure considerably. Another important factor mentioned is over-fatigue, but this, again, is difficult to estimate, and even medical opinion is divided as to the amount of sleep required in various ages. To allow a child to have its sleep out is perhaps best, but the condition of many homes and streets makes it impossible for children to get enough sleep. At the aural clinic ionisation is still carried out with very successful results. At the throat clinic, after operation for tonsils and adenoids, detailed instructions are given, and children practise breathing exercises at the remedial exercises clinic. There are still no special schools for the educable feeble-minded in the borough.

Leeds.

Dr. Algernon Wear presents an account of the school medical services, and to this is appended the report of the organiser of physical education and that of the chief inspector of the employment of children; the whole is an excellent survey of the work for child welfare. The ascertainment of defects appears to be very thorough and the children in special schools are inspected every two years. For treatment there is a good provision of clinics, though the rapid increase of work calls for enlargement and extension of many of them. There has been a substantial decrease in ringworm and scabies cases, but a marked rise in malnutrition, largely due to unemployment in the area. Open-air school accommodation is very limited, but a school for pre-tuberculous children is to be opened this year. Dr. Wear alludes to the problem of the physically defective children who are also mentally retarded. Such retardation is, in fact, much more frequent than is generally supposed; it varies in degree from mere backwardness to the severe mental defect sometimes found with cerebral paralysis. Children who are severely crippled and only slightly subnormal can be dealt with, as Dr. Wear says, by putting them in an appropriate class in a special physical defective school. Those who are actually mentally defective present greater difficulty, and from the purely economic standpoint the result of any kind of educational treatment is seldom proportionate to the cost, since few of them are ever made even approximately self-supporting. Dr. Wear recognises the need for manual training for elder mentally defective boys; this would afford better prospects of satisfactory and lasting employment. Eighty per cent. of the children in the schools were inspected by the dentists and 44·6 per cent. of those requiring treatment received it. Every child in the nursery schools was examined and an average of 4·6 defects was found in each infant. Competitions for healthy children of various ages were held and were well attended. Valuable research is being conducted on the development or aggravation of defective vision and squint. The scheme is a continuous one and the conclusions are not yet available, but its results should, as Dr. Wear says, be far-reaching and of the greatest importance to the study of the ophthalmology of the child.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 26TH, 1926.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 165 (last week 156); scarlet fever, 1355; diphtheria, 858; enteric fever, 58; pneumonia, 587; puerperal fever, 36; cerebro-spinal fever, 10; acute poliomyelitis, 10; encephalitis lethargica, 47; dysentery, 16; ophthalmia neonatorum, 131. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 (0) deaths from enteric fever, 26 (3) from measles, 4 (2) from scarlet fever, 26 (4) from whooping-cough, 38 (11) from diphtheria, 54 (13) from diarrhœa and enteritis under two years of age, and 37 (7) from influenza. The figures in parentheses are those for London itself.

MENTAL HOSPITAL REPORTS.

THE *Glasgow Royal Asylum* had an average of 525 patients resident during 1925, and nearly 50 per cent. of the year's admissions were voluntary boarders. The physician-superintendent draws attention to the fact that only one case of general paralysis was received, which coincides with the general impression that this condition is less frequently encountered than formerly. The death-rate was 8 per cent. The number of patients at the psychiatric out-patient clinic at the Western Infirmary is steadily increasing. The occupational therapy of this institution is well known, and a new pavilion has been opened. The central hall is used as an art room for quiet occupations, relieving the congestion of the class-rooms and keeping an atmosphere of quiet in the hall that often induces excited patients to settle to work. A successful sale of work and a Christmas party were organised. Butter has been substituted for margarine, and the visiting commissioners note that every effort is made to approximate the dietary to the idiosyncrasies and home conditions of individual patients. The seaside home at Skelmorlie continues to be a useful and popular adjunct to the main buildings. The dentist removed 341 teeth during the year, mostly under local anæsthesia, and stopped 32 more. Difficulties in treating mental cases might be anticipated, but have not in fact proved a serious bar to his work.

The *Cheshire County Mental Hospital* at *Parkside* was overcrowded with patients at the end of the year, but the excess has been partly relieved by the transference of some cases to workhouses. The death-rate was the lowest for 25 years (5·61 per cent.); and the recovery-rate showed an advance on that of the previous year, reaching 31 per cent. Post-mortem examinations were held on 63 out of the 70 patients who died during the year. General paralysis and arterio-sclerosis accounted for more than half the deaths. There was some mild influenza and eight cases of dysentery, but no other epidemic disease. 64·7 per cent. of the male patients and 61·9 per cent. of the females were usefully employed last year, and an instructor for the male side has been appointed in addition to the instruction mistress. Eighty-three cases have been taught some form of handicraft, and a gymnasium has been added to the recreation department. Parole has been granted to about 200 patients. Special facilities are available for treating recent cases. Treatment and clinical rooms and verandahs are attached to the admission wards, and the visiting commissioner speaks of the treatment rooms as "models of their kind." Each contains continuous needle and shower baths, a radiant heat bath and a massage couch, and is staffed by skilled nurses. Ultra-violet radiation plant has also been installed, and the medical superintendent reports that the good results following its use have included marked increase of weight, muscular activity and cheerfulness, with slight decrease in blood pressure. Manic-depressive cases have responded the most readily, and mild cases of melancholia and delusional insanity with irritability have also benefited. The treatment is contra-indicated in melancholia, and seems inactive in dementia præcox. A good deal of valuable research work has been carried out in the laboratory, including observations on blood pressure in varying mental states, the sudorific reactions of the skin, the value of ovarian extract in the insanities of child-bearing, and the intestinal flora of patients with diarrhœa. Seven more nurses obtained their final certificates during the year, and it is welcome news that the superintendent is finding that a better and keener type of probationer is now entering the service. A sister tutor has been appointed. General paralytics have been treated with malaria, and two cases have been discharged and continue well, while seven appear distinctly improved. We characterised this institution last year as "one of the most up-to-date and progressive in the kingdom," and it is clear that the staff are not resting on their laurels.

The Services.

ROYAL AIR FORCE MEDICAL BRANCH: NEW PAY AND CONDITIONS.

As was announced in THE LANCET last week, improvements have been made in the conditions of service and emoluments of medical officers of the Royal Air Force with the intention of attracting into the Service the best type of medical man. The duties of a medical officer in the Air Force include not only the prevention and treatment of ordinary diseases and of those to which the personnel of the fighting services may be liable, but the special study of the mental and physical stresses on the aviator.

Entry being by means of a short service commission for three years, extensible to five, the officer is not committed to a permanent career. Permanent commissions are granted by selection from those holding short service commissions, and every entrant has a 50 per cent. chance of permanency. Short service officers passing to the reserve after five years will receive an increased gratuity of £700, but the gratuity after three years' service remains at £350.

Increase of Pay.

Increases of pay of from 2*s.* to 11*s.* a day have been granted in all ranks above Flight Lieutenant and the scale in force from July 1st, 1926, will be seen from the following table. The rates shown in the first column are "standard" and are liable to the extent of 20 per cent. to periodic variation according to the cost of living. The current rates are shown in the second column, and in the third the total yearly emoluments at current, rates if allowances are drawn in cash in lieu of provision being made in kind. The cash allowances included are at current home rates for unmarried officers. Married officers over 30 years of age receive higher allowances.

Rank.	"Standard" rate of pay per diem.	Current rate of pay per diem.	Current rate of pay and allowances per annum.
	£ *s.* *d.*	£ *s.* *d.*	£
Flying Officer	1 4 0	1 2 6	557
Flight Lieutenant	1 6 0	1 4 6	608
Flight Lieutenant after two years in the substantive rank	1 8 0	1 6 6	645
Flight Lieutenant after four years in the substantive rank	1 10 0	1 8 4	678
Squadron Leader	1 14 0	1 12 2	760
Squadron Leader after two years in the substantive rank	1 18 0	1 15 10	827
Squadron Leader after four years in the substantive rank	2 0 0	1 17 10	864
Squadron Leader after six years in the substantive rank	2 4 0	2 1 6	931
Squadron Leader after eight years in the substantive rank	2 8 0	2 5 4	1001
Squadron Leader after ten years in the substantive rank	2 10 0	2 7 4	1037
Wing Commander	2 15 0	2 12 0	1133
Wing Commander after two years in the substantive rank	2 17 0	2 13 10	1166
Wing Commander after four years in the substantive rank	3 3 0	2 19 6	1270
Group Captain	3 10 0	3 6 2	1463
Air Commodore	4 0 0	3 15 8	1691
Air Vice-Marshal	5 0 0	4 14 6	2100

Promotion to Flight Lieutenant occurs after two years' satisfactory service and to Squadron Leader after ten years' service, reducible to eight years in exceptional cases. Promotion above Squadron Leader is by selection, subject to m nimum periods of service. The Director of Medical Services, if as at present an Air Vice-Marshal, will receive the pay and allowances of his rank.

Retiring Allowances to Permanent Officers.

The gratuities issuable to permanent officers have been increased to £1500 after 10 years' service and £2500 after 15 years' service. After 20 years' qualifying service officers are eligible for retired pay, the amount depending on age and length of service and in the case of senior officers on rank. The maximum rates of retired pay are, subject to certain conditions, as follows, the rates for Air Commodores and Air Vice-Marshals being new:—

Rank.	"Standard" maximum rate.	Current maximum rate.
	£	£ *s.*
Air Vice-Marshal	1010	954 10
Air Commodore	950	898 0
Group Captain	900	850 10
Wing Commander	600	567 0
Squadron Leader	500	472 10

Various Improved Conditions.

Officers who have held resident appointments in recognised civil hospitals for not less than one year (of which half may be spent as non-residents) will be antedated one year for purposes of seniority promotion, retired pay, and retiring gratuity, the valuable experience provided by hospital appointments being thus recognised. Every officer on entry will receive eight weeks' special instruction in the medical problems connected with flying and other Air Force duties, while with a view to enable the officer to take general or special courses, whether at civil or service medical schools, study leave up to nine months in all will be allowed during the first 16 years of service. The promise should be noticed that as far as possible officers will be allowed to take such study leave when convenient to themselves and to choose their subjects and places of study.

The Nursing Service.

The Air Ministry also announce a revised scheme of emoluments, including pay and retired pay, for members of Princess Mary's Royal Air Force Nursing Service. A permanent member of the Service will now be permitted to retire with a gratuity of £250 after ten years' service and £400 after 15 years.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capts. R. J. MacKeown and F. H. Nimmo to be Surg. Rear-Admirals, and are placed on the Retd. List at their own request.

Surg. Capt. R. StG. S. Bond to be Surg. Rear-Admiral.

Surg. Lt. C. H. Savory to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Col. F. F. Carroll, half pay list, retires on retd. pay.

Maj. R. G. H. Tate retires on retd. pay, and is granted the rank of Lt.-Col.

J. W. Kendall to be temp. Lt.

MILITIA.

Capt. H. C. Bazett to be Maj.

ROYAL AIR FORCE.

Wing Comdr. A. W. Iredell to be Group Capt.

Squad. Leaders W. A. S. Duck and A. E. Panter to be Wing Comdrs.

Flight Lt. H. E. H. Tracy to be Hon. Squad. Leader.

Flying Officer H. W. Corner is promoted to the rank of Flight Lt.

NORTH PERSIAN FORCES MEMORIAL MEDAL.—Dr. W. Corner, O.B.E., Iraq Health Service, has been awarded the North Persian Forces Memorial Medal for the year 1925 for his paper on Malaria in the Kirkuk Division of Northern Mesopotamia during 1923, published in the *Transactions* of the Royal Society of Tropical Medicine and Hygiene (1925, vol. xix., Nos. 1 and 2). This is the third award of the medal, which is awarded annually for the best paper on tropical medicine or hygiene published in any journal during the preceding 12 months by any medical officer, of under 12 years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service, provided that a paper judged to be of sufficient merit has appeared.

THE LANCET.

LONDON: SATURDAY, JULY 10, 1926.

THE STANDARDISATION OF INSULIN.

THE discovery in the laboratory of some new therapeutic agent at once opens up a whole series of important problems both from the clinical and the industrial point of view. The control of a powerfully active substance when made by one laboratory on a small scale and tried on a few patients is a relatively small matter owing to the few persons engaged in the whole process. As soon, however, as the substance is manufactured on a large scale and is handed out to the world at large difficulties begin to creep in. In the first place, there is the question of the transference of a small scale operation to a large scale. This is very often a matter of great difficulty, and the efficiency depends on the skill and organising power of the manufacturers. The standardisation, however, is a matter which can only be undertaken by those persons who have experience in biological tests. If all the preparations made by different manufacturers are to be of the same strength a central controlling body is a necessity. If all preparations are not of a standard strength disastrous results may occur when patients are treated with material emanating from different firms. The Medical Research Council in England early assumed control of the standardisation of insulin in this country, and evolved a highly efficient organisation whereby every batch of insulin bought on the English market had to undergo standardisation. It is obvious that if this uniformity is desirable for any one country it is also desirable for the world at large, and the adoption of some international standard unit of activity becomes necessary. The International Conference of the Health Organisation of the League of Nations appointed a special committee, under the chairmanship of Dr. H. H. DALE, to deal with this matter, and an international standard has now been instituted with the result that all preparations of insulin have the same potency.

A full account of the steps taken to this end is contained in a report [1] recently published to which Dr. DALE contributes an introduction describing the method whereby the international unit was fixed. 500,000 units of insulin were collected from the most important manufacturers of insulin throughout the world. These specimens were pooled and converted into a uniform dry, stable powder in Dr. DALE'S department at the National Institute of Medical Research at Mount Vernon. As a result of experiments in several laboratories the unit of insulin was defined by the Insulin Committee of the University of Toronto as "the activity contained in 0·125 mg. of the international standard preparation." The Conference then placed on record the following unanimous recommendations: 1. That the dry preparation of insulin hydrochloride, prepared by the Medical Research Council of Great Britain at the request of the Edinburgh Conference, should be accepted as the international standard preparation of insulin. That 1 mg. of this standard contains 8 units of insulin (or 1 unit = 0·125 mg.), as provisionally defined by the Insulin Committee of the University of Toronto. 2. That this standard preparation be kept, on behalf of the Health Organisation of the League of Nations, by the Medical Research Council, who will undertake to test the permanence of its potency from time to time. 3. That samples of this preparation, weighing 0·100 g. each, be sent to some responsible organisation in each country (such as an Insulin Committee or a Government institution), who will undertake further distribution to testing laboratories. In those countries in which no suitable organisation for this purpose exists, samples of the standard will be distributed by the Medical Research Council after consultation with the Insulin Committee of the University of Toronto, or, in case this Committee be discontinued, with one appointed by the Health Committee of the League of Nations. 4. That each testing laboratory should prepare a standard of its own, and should compare the potency of this with the sample of the international standard placed in its hands for this purpose. When the latter is exhausted, further comparisons with the international standard should, where possible, be undertaken by the responsible authority for the particular country. 5. That either of the following methods, of which full details are set out in separate reports, be considered as suitable for the bio-assay of insulin:—

(a) *Methods Depending on the Effect of Blood-sugar: First Method.*—Varying quantities of insulin that are less than the convulsive dose are injected subcutaneously into rabbits of about 2 kg. body-weight, from which food has been withheld for 18 to 24 hours, and the average of the blood-sugar percentages over a period of five hours after the injection is subtracted from the blood-sugar percentage immediately preceding the injection. The number of units of insulin present in each c.cm. of the preparation is then calculated by use of a formula. Each rabbit used in the assays is tested at suitable intervals with a standard preparation which is periodically compared with the international standard.

Second Method.—Alternatively, one half of a series of rabbits receives, in each case, an injection of a half unit of the standard preparation per kg., and the other half receives, on the same day, the dose supposed to be equivalent of the sample under test. The percentage fall of the blood-sugar content over a period of five hours is determined as above. A few days later the determinations are repeated on the same series of rabbits in this way, that the rabbits previously receiving the standard preparation now receive that under test and vice versa.

From the relation between the falls of blood-sugar content produced, on the one hand, by the standard preparation and, on the other hand, by the sample under test, the true activity of the latter in units per c.cm. can be calculated.

(b) *Method Depending on the Incidence of Symptoms in White Mice.*—The assay is carried out by comparison with a standard preparation injected simultaneously with the unknown sample on an equal number of mice from a common stock. The onset of convulsions or collapse is used as the end-point of the reaction and a mouse dose is the quantity producing convulsions (or collapse) in half the number of mice injected. During the test the mice are kept in an incubator at a uniform temperature of not less than 30° C.

[1] The Biological Standardisation of Insulin, including Reports on the Preparation of the International Standard and the Definition of the Unit. League of Nations Health Organisation, Geneva, 1926. Agents in Great Britain: Constable and Co.

The Report contains articles on the standardisation of insulin in the most important centres in the world. Prof. J. J. R. MACLEOD and Mr. M. D. ORR describe the method employed by the Insulin Committee of the University of Toronto in standardising their insulin. There follow accounts from other institutions—namely, E. R. Squibb and Sons' Research and Biological Laboratories, the Lilly Research Laboratories (Dr. G. H. A. CLOWES), the Nordisk Insulin Laboratorium and the Laboratory of Zoo-physiology of Copenhagen University (Dr. A. M. HEMMINGSEN and Prof. A. KROGH), the Wellcome Physiological Research Laboratories (Dr. J. W. TREVAN and Miss ELLEN BOOCK), and the National Institute for Medical Research, London (Mr. H. P. MARKS). It is a satisfaction and pleasure to note that the Medical Research Council has played a paramount part in the adjustment of delicate international negotiations. The practical importance of their successful outcome is far-reaching. It implies, for example, that a practitioner will now be able to permit a diabetic patient to travel abroad in the confidence that he will be supplied with insulin exactly corresponding in potency to that which keeps his blood-sugar in check at home. It may be hoped that this International Report will be the first of many, and that other hormones which at present are sold by commercial firms without any control at all will in the near future come under the same intelligent control as insulin.

PUBLIC HEALTH IN CHINA.

IT is an interesting fact that in the social and political welter in which China now finds herself there should be arising in that country the strongest manifestation that has yet been made of a desire to promote public health. It may be presumed that the distressing circumstances in which the Republic has been abiding for some years have accentuated for the inhabitants generally that struggle for existence which probably is harder in China than in any other country in the world, for these circumstances have not interfered in any regular way with the growth of population. Human fecundity is there a marked feature, the average family of every married couple is from four to five children, and the adult unmarried are rare. That much can be surmised, though there are no trustworthy statistics from which either the total population or the mortality-rates can be estimated. Anyhow a vast and increasing mass of people is living in China in much the same way as their forefathers have done for over a thousand years, and families are being reared at an incredibly low cost, for, when droughts and floods are absent, sufficient food can be obtained for all, though obtained only as a return for unceasing toil. With such a situation the need for public health measures is imperative, and this need is now being felt as much by the Chinese themselves as by the various populations resident in China but coming from countries where Western society has laid down scientific standards and has adopted measures of sanitary legislation.

We publish in another column a communication furnished to us by Surgeon-General S. H. CHUAN from the Ministry of War at Peking, in which that distinguished official pleads eloquently for the allocation of the money received by the British Government in the form of the Boxer Indemnity to the promotion of public health in China. We pointed out recently how right and just such an allocation would be, when publishing an earnest appeal to that effect from two representative leaders of Chinese medicine, Dr. S. M. HOW, and Dr. W. L. NEW; and in the same issue of THE LANCET (see THE LANCET, May 1st, 1926, p. 946) Dr. JOCELYN SMYLY, of the Peking Union Medical College, described the whole medical situation in China as justifying such an employment of the sums which it has been decided by our Government to hand back to China. This view is endorsed by Surgeon-General CHUAN, who points to the high infantile mortality and the recurring epidemics to prove how dire the need is for an organised public health service, while the good effect of such a service can be demonstrated by the far better health conditions which prevail in the different foreign centres where small sections of the population have fallen under the influence of Western knowledge. Practically wherever instructed medical diagnosis can go in China the prevalence is found of tuberculosis, dysentery, and trachoma, while venereal disease is a problem in all the urban centres. Here further frequent epidemics may rage unchecked in the absence of any regulations as to notification or segregation. These facts, patent to every foreigner living in China, have forced themselves on the attention of many Chinese, especially those who have received their education away from home or have benefited in China by foreign tuition. And medical opinion is growing in force. The medical profession in the Empire as represented by foreign-trained graduates is enlarging, and a modern tendency towards intensive study of special diseases is springing up with it. This means that a certain number of Chinese medical men are now focusing their attention on public health, and everywhere these men find the call for improved sanitation. This fact escapes the vast Chinese populace that lives eternally overcrowded, with its homes hermetically sealed. But the first remedy for such a condition of things that jumps to the Western mind would not work efficaciously in China—namely, education along general lines. In Great Britain we see how, as the populace grows more enlightened, the teachings of science are more readily accepted and public coöperation is more promptly forthcoming. But things would work in no such definite way in China, where for the time being kindly and authoritative administration cannot be replaced by argumentative conversations in which all-important scientific issues would get complicated by political prepossessions. What is really required is the improvement of medical education in China, working hand in hand with the awakened Chinese doctors.

Medical education in China has been so far conducted on philanthropic and altruistic lines, and except for the University in the colony of Hong-Kong has been almost entirely in the hands of medical missionaries, while the Peking Union Medical College, now administered by the Rockefeller Foundation, was founded by British and American missionaries. The number of graduations from foreign medical schools in China amounts to about 200 annually, and a similar number of medical graduates return each year from schools abroad. This band of foreign-trained graduates conform to a reasonably good standard, and they would form admirable auxiliaries if the money available from the Boxer Indemnity Fund were used to promote a public health scheme. Such a scheme, moreover, would have no caste disabilities to over-ride or evade, and would be dealing with a docile population which already freely accepts, for example, the practice of vaccination and the antitoxin treatment of diphtheria. At the instance of the Chinese Medical Missionary Association, a Council on Health Education was formed some

years ago, and the members under the leadership of Dr. W. W. PETERS, an American citizen, have carried out health campaigns by means of the cinema, public meetings, and pictorial posters; the work has been enthusiastically welcomed in the towns where the demonstrations have been made. A public health station in Peking, established through the Rockefeller Foundation by Prof. J. B. GRANT, has already gained much practical experience upon which to found future work and the field for that work is expanding with the expansion of factory activities in the Empire; already factory laws are needed, and a public health system is obviously necessary for the construction and maintenance of legislation. Lastly, there is now in China a National Medical Association which publishes a monthly journal in Chinese and English, and which has been referred to in these columns as a rallying centre for modern Chinese medicine. We have received this week a Memorandum from the Association which is being presented to the British Boxer Indemnity Commission recapitulating with the force of local inspiration all the above arguments. The Chinese are helping themselves, and they should be helped. Therefore, again, we put forward the earnest hope that substantial sums of money, over such a period as the available total permits, should be allocated from the Boxer Indemnity Fund to the foundation of a public health scheme for the Chinese Empire.

COLOUR-BLINDNESS.

THE facts of colour-blindness, so far as they are of importance in the affairs of life, have long been known, but their scientific explanation is a ground over which theorists continue to fight without any apparent prospect of coming to an agreement. The supporters of each main theory—the Young-Helmholtz, the Hering, the Edridge Green—are accustomed first to state their theory and then to cite an array of experiments with colour-blind subjects in support of it, numerous enough to carry entire conviction to the mind of the writer, if not of the reader. These theories are mutually antagonistic and the facts, being entirely dependent upon the sensations of the subjects experimented on, are such as can only be verified by psychological investigation—not such, therefore, as are susceptible to ordinary physiological or physical proof. It is not to be wondered at that the average doctor, and even the average ophthalmic surgeon, is content when he has been given a practical test to distinguish the degree of colour-blindness which is dangerous for certain occupations and leaves theories to the theorists. Nevertheless the scientific importance of the matter is very great, for with the process of colour vision is bound up the process of all vision, the physiological activities of the retina and of the brain. Miss Mary Collins [1] approaches the subject in a new way which, while not purporting to prove anything at all, appears to us to promise in the end a real advance. All the colour theories are stated while no single one and no combination of them is adopted as a thesis in support of which the writer arrays her facts. These facts are limited in number, being all derived from observations taken on ten colour-blind students, all of them belonging to the common class of colour-blinds whose peculiarity is an inability to distinguish red from green. Each of these students was subjected to a detailed examination with all the common tests. From careful notes of their answers some interesting results emerge, some of them confirming the work of others, but some of them new. The colourless or grey band in the green region of the spectrum was confirmed in all cases, and that the breadth of this band varies in different subjects, as Edridge-Green contends, was also established. The existence of a second neutral band outside the spectrum in the purple is a new observation not explained by any current theory. Edridge-Green's belief that there is a gradation of colour defect is entirely substantiated, but it is contended that certain results obtained are not explained by his theory. Many colour-blinds use the expression "reddish-green" or "greenish-red" to describe their sensations, expressions which to the normal person are entirely meaningless. Edridge-Green finds a natural explanation for this phenomenon in the case of trichromates for whom on his theory green and red are next-door neighbours in the spectrum. Miss Collins found the expression used by ordinary bichromates and suggests an explanation which we confess we find ourselves unable to follow. A large proportion of the book is taken up with a detailed record of the application of the various tests, and for practical purposes Miss Collins comes to the conclusion that the Edridge-Green lantern is the best of all. It takes time, however, and for ordinary cases many simpler tests were found to be adequate if used with knowledge. The Holmgren wool test, if used in the old way, is not to be recommended, but with the pale green used as a test skein Miss Collins found that all her subjects substantially failed in their matches, and in this professes disagreement with Edridge-Green, who states that many colour-blinds can easily pass this test without detection. What Edridge-Green says, however, is that *three-unit* colour-blinds would usually pass this test with success. Since all Miss Collins's subjects were two-unit ones there is really no apparent ground for dispute.

The fact is that the interpretation of subjective sensations is so fraught with difficulties that to prove any theory of colour-blindness is almost impossible. The available material concerning the relation between retinal structure and retinal function is at the moment quite inadequate for the purpose of throwing any light upon the mechanism of colour vision in man. This is, at any rate, the conclusion come to by Dr. Julia Bell,[2] who after years of study of the subject has been impressed by the elusiveness of the phenomena of colour vision and by the sadly little we really know about it. In this conclusion most of those who have given attention to the subject will concur. The first section of her book on colour-blindness, which forms the second part of the Nettleship Memorial volume, is mainly introductory and historical. The next section deals with so-called "total" colour-blindness, an affection which, inasmuch as it is usually but not necessarily combined with nystagmus, photophobia, and some degree of amblyopia, has generally been supposed to have little connexion with ordinary dichromatism or "Daltonism" in which none of these defects are typical. There seems to be no doubt that in the typical totally colour-blind person the spectrum is identical with that seen by the normal eye under dark adaptation. In this respect total colour-blindness differs from another condition characterised by nystagmus, photophobia, and amblyopia—viz., albinism—although in one case of this latter condition (recorded by Rugg-Gunn) there was a definite shortening of the red end of the spectrum. Moreover, in both conditions there is definite pathological evidence that the structure of the foveal region of the retina is not normal. As to the hereditary factor in the causation of total colour-blindness, although it is undoubtedly a familial disease, the pedigrees collected do not show one case of its occurrence in more than a single generation and only one of its occurrence in more than a single sibship (children of a common

[1] Colour-Blindness, with a Comparison of Different Methods of Testing Colour-Blindness. By Mary Collins, M.A. Ed., Ph.D., Lecturer on Applied Psychology, Edinburgh University; with an introduction by Dr. James Drever. London: Kegan Paul, Trench, Trübner and Co. 1925. Pp. 237. 12*s*. 6*d*.

[2] Colour-Blindness. By Julia Bell, M.A., M.R.C.S., L.R.C.P. Being Part II. of the Nettleship Memorial Volume on Anomalies and Diseases of the Eye (the second volume of the Treasury of Human Inheritance, edited by Karl Pearson, F.R.S., for the Francis Galton Laboratory for National Eugenics). Cambridge University Press. 1926. With 15 plates of pedigrees. Pp. 267. 45*s*.

parentage). Consanguinity of parents appears to play an important part, as in over one-quarter of the cases it was present, a feature which puts it into relation with retinitis pigmentosa and congenital stationary night blindness; in both of these diseases, however, the inheritance is commonly through several generations.

Coming to congenital colour-blindness of the more ordinary type, or "dichromatism," whose most common symptom is a confusion between red and green, the question is discussed whether in these cases, in which apparently only two of the spectral colours can be distinguished by their tints, the two colours seen by the dichromate really correspond to the yellow and blue as seen by the normal person, or whether, as Edridge-Green maintains, they really correspond to the colours most widely separated in the spectrum—namely, red and violet. Dr. Bell inclines to the former view on the ground that the colour-blind themselves generally recognise yellow and blue without hesitation, whereas with red and green they nearly always hesitate. Moreover, in acquired conditions such as toxic amblyopia perception of red and green is always the first to go and the last to return. A confirmation of this view is found in a rare case of unilateral colour-blindness described by von Hippel in which the patient could interpret the sensations experienced with the affected eye by reference to those of the other eye which was normal. For his affected eye two colours only occupied the spectrum—namely, yellow and blue. Other unilateral cases have been described by various observers but they are very rare. Undoubtedly the most valuable part of Dr. Bell's book is not her criticism of the theory of colour-blindness, but her collection of pedigrees illustrating the hereditary nature of the condition. It has been repeatedly stated on theoretical grounds that for colour-blindness to become manifest in women the father must be colour-blind and the mother must also be a carrier (i.e., she must have had a colour-blind parent), and further, that all the sons of a colour-blind woman must be colour-blind. This does not turn out to be true without exception, but it does hold good in a great majority of the 91 cases collected. Colour-blindness belongs to that group of inheritable diseases which is mainly manifested in males and transmitted by their unaffected daughters, but not by themselves directly to their sons. Of the 235 pedigrees given 35 were collected by Nettleship. The volume marks a progress in the young science of heredity to which Nettleship, during the latter part of his life, made such important contributions.

ÉMILE COUÉ.

Émile Coué, whose death was announced at the beginning of the week, was a singular and sympathetic figure. He had practically no scientific equipment, and does not seem to have been at all well read in either philosophy or psychology, but there can be no doubt that from ministrations along his simple formula many people widely differing in physical and mental qualities received benefit, though we have seen no facts or even surmises as to the permanency of the improvements. During his visits to this country he found admirers as well as scoffers, but there was no hostility to the man, for Mr. Coué's charming and parental manner, which aroused in his subjects a feeling of delightful dependence, also disarmed anything like venomous criticism. A few reflections which were offered by English psychologists with a view to check a public enthusiasm that might have been mischievous constitute all the effort that was made on this side of the Channel to set up any scientific estimation of his theories, and the general conclusion was arrived at that any process inducing a belief in cure, under whatever disguise it might appear, would help considerable groups of nervous sufferers, and might influence the progress of bodily disease.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

As had already been foreshadowed publicly, the postponed list of Birthday Honours does not include the name of many scientific or medical men. Two medical men have received knighthoods; Sir Alexander MacCormick, the well-known consulting surgeon at Sydney, receives a K.C.M.G., and Mr. Alfred H. Evans a civil knighthood, and Mrs. Scharlieb, consulting gynæcologist to the Royal Free Hospital, receives the D.B.E. Major-General R. S. Hannay, Deputy Director Medical Services, Southern Command, and Surgeon Captain R. St. G. S. Bond, R.N., receive the C.B. Dr. J. O. Shircoe, Director of Sanitary Services in Tanganyika, is appointed C.M.G. Mr. Ernest Clarke is appointed C.V.O., and Colonel G. W. Heron, Director of Department of Health, Palestine, receives the C.B.E. In the Military Division of the Order of the British Empire Miss M. D. Knapp, chief lady superintendent, Queen Alexandra's Military Nursing Service in India, is appointed C.B.E., and Lieut.-Colonel H. R. Brown, I.M.S., Captain William Bligh, M.D., R.A.M.C., Major J. W. Malcolm, R.A.M.C., and Dr. D. M. Macphail, Dr. W. M. McDonald, Dr. F. E. Whitehead, of the Colonial Medical Service, are appointed O.B.E. The same honour is awarded to Major William Egan, R.A.M.C., Assistant Director of Medical Services in Scotland; Major C. H. H. Harold, M.D., Assistant Instructor in Hygiene, Aldershot; and Lieut.-Colonel C. E. Steel and Major W. C. Lowe, of the Royal Army Veterinary Corps. Mr. W. G. Hunter, Deputy Accountant-General of the Ministry of Health, is appointed C.B.E., and among the Indian awards Prof. A. K. Dalal, of the Grant Medical College, Bombay, is given the O.B.E., the M.B.E. being awarded to Mr. A. G. Butt, of the Office of the Director of Medical Services; Major J. H. A. Donnelland, resident medical officer at the Jamsetjee Jeejeebhoy Hospital; and Major H. C. Craggs, I.M.S. Lieut.-Colonel T. W. Harley, I.M.S., district medical and sanitary officer and superintendent, Medical School, Madura, Madras, receive the C.I.E. Major H. W. V. Cox, civil surgeon, Punjab, receives the I.S.O., while the Kaisar-i-Hind medal is awarded to Miss F. A. Hodgson, superintendent of Lady Minto's Indian Nursing Association; Miss Agnes Scott, M.B., the secretary of the Countess of Dufferin's Fund; Dr. J. D. O'Donnell, chief medical officer of the Kolar Gold Fields; and Major J. A. H. Holmes, surgeon to the British Station Hospital, Quetta.

The majority of those receiving titular honours are rewarded for political and public services, but two of the new knights represent the influence in the development of the health of the nation which is exercised by sport and games, an influence that is so freely endorsed by the Royal Family. Sir George Rowland Hill, Chairman of the Greenwich Conservative Association, is largely responsible for the fine and orderly expansion of Rugby Union football as a national sport, while Sir Francis Lacey has been for a long generation the untiring secretary of the M.C.C. In this capacity he has been the executive officer in a complete transformation of the headquarters of cricket, as well as the politic adviser to succeeding presidents and committees, in whose hands there have lain over and over again responsibilities of national and even international significance.

UNILATERAL PHRENIC PARALYSIS.

WE publish elsewhere in this issue an admirable example of the way in which the deductions of accurate clinical observation may be confirmed and amplified by laboratory experimentation. Last year we published a paper by Sir Charlton Briscoe pointing out

that paralysis of one half of the diaphragm was commoner than the uncertain radiological signs which it exhibits had led us to suppose and that the main cause of this paralysis was simple mechanical pressure on one phrenic nerve. Lady Briscoe now gives a summary account of her experimental examination of the effects of pressure on the phrenic; fuller details will be found in the current *Journal of Physiology* (vol. lxi., p. 353). She shows in the first place that the normal discharges of the respiratory centre can be prevented from reaching the diaphragm by a degree of pressure which we may believe can be achieved in the living body, without much difficulty, through a growing tumour or an enlarging gland, for it is less than diastolic arterial pressure. The blocking effect depends on at least four variables: the degree of pressure, its duration, the size of the compressed nerve, and the length of it which is compressed. A weight, for example, of 400 g. achieves in ten minutes the same result as 80 g. in 90 minutes; large nerves, such as the brachial plexus, are more resistant than small nerves, such as the recurrent laryngeal. Just how the effect is produced needs more explanation; Lady Briscoe failed to find any very definite histological changes. The importance of the time factor suggests that conduction fails when something viscous has been squeezed out of place; the deformation, whatever it is, is easily corrected, for the nerve begins to conduct again almost at once when the pressure is taken off. The diaphragm is commonly in postural tone and pressure blocks the motor impulses before it blocks those which maintain tone; and when the pressure is released after producing complete block, motor impulses get through first. If the nerve is paralysed quickly with a big pressure, loss of tone is complete and the dome of the corresponding half of the diaphragm rises high in the chest. It is interesting to note that the displacement is not nearly so great when a small pressure produces the same degree of block in a longer time, suggesting that the diaphragm has within itself a certain capacity of compensation for the loss of central impulses. Lady Briscoe also records the rather unexpected result that the stronger discharges from the respiratory centre produced by CO_2 dyspnœa or stimulation of an afferent nerve will not force a block through which the weaker impulses of quiet respiration can not pass; the implication is that the diaphragm is not concerned in excessive respiration.

Recognition of the fact that pressure reduces conductivity slowly and does not necessarily abolish it suddenly, explains many of the obscurities which are seen on X ray examination. In complete paralysis of one phrenic, there is inverse movement—i.e., the sound half of the diaphragm descends and the paralysed half is pulled up mechanically. Partial blocking of the nerve produces partial paralysis of the muscle; moreover, it delays the onset of each contraction and has less effect on tone than on motility. Hence, varying degrees of pressure can produce almost any radiographic picture, and, since partial is commoner than complete block, many cases yield dubious results which are open to more than one interpretation. Lady Briscoe's inquiry has, however, gone a long way towards clearing up the difficulties.

KLEPTOMANIA AND DISHONESTY.

THE summer sales, if we may believe the statement of a correspondent responsible for the conduct of a large millinery establishment, offer a happy hunting-ground for the kleptomaniac. But, apart from the special opportunities offered at these orgies of bargaining, now in full celebration, there are perpetual instances occurring in the police-courts of thefts from counters, when the defence of mental instability, taking the form of an irresistible impulse, is put up. Having regard to the wide authority there is for the belief that in some instances these thefts are the vagaries of irresponsible people, the fact remains that the majority of the cases are an exhibition of flat dishonesty. Dr. Antheaume in *Le Matin*, writing on an epidemic of thefts perpetrated by women from the counters of large shops, went as far as it is possible to go to explode the theory of irresponsibility by one of his arguments which it is difficult to get over. "Can we grant," he asked, "an overpowering impulse in an otherwise honest person as the reason for thefts from the display counters, when there are no instances extant of the goods being returned on the impulse disappearing?" The question is pertinent, for in a good many cases which have formed the subject of legal inquiry the accused person has been found in possession of a store-house of stolen goods. On the other hand, this very occurrence has been used as a proof of the mental instability of the accused, it being argued that no one really sane would acquire things without putting them to any use—if unsound to this degree why not unsound to the point of pathological kleptomania? The whole story, however, is not so simple. That a pathological impulse to steal really exists is well known. Maurice Healy describes a case in *Mental Conflict and Misconduct* with an interesting account of his findings as to the unconscious motivation of the impulse, and patients occasionally come for treatment of the condition before they have fallen into the hands of the police. In forming a judgment concerning a particular case the skilled investigator would be guided to a great extent by the existence of other symptoms, for the impulse is, as a rule, only one detail in a larger picture. The patient's description of the impulse is important, for it would be expected to produce the same state of mental tension, when resisted, that is known to occur when other pathological compulsions or inhibitions are in question; and this state is not likely to be described by the merely dishonest delinquent who pleads irresponsibility. In the absence of skilled investigation, however, the plea of "kleptomania" can carry little weight, and there is no doubt that it is often advanced when the pathological basis for it is slight or non-existent.

A DEVICE FOR PURIFYING VACCINIA VIRUS.

THE difficulties met with in attempts to procure filtrates of the vaccinia virus through filters of the Berkefeld or Pasteur-Chamberland type have been recorded by numerous workers, whose experiences are summarised in the report to the Medical Research Council published last autumn by Dr. M. H. Gordon.[1] The virus appears to be adsorbed by the filter-candle. The fact that this virus is not a filter-passer has been confirmed by recent observations made by Dr. Myers Coplans, who, in the *Journal of Tropical Medicine and Hygiene* of April 15th and May 1st, describes an alternative device for separating it in quantity from epithelial and other tissues. This device is new and ingenious, taking the form of slow wick-syphonage; it is an outcome of the author's experience in connexion with the purification of water in the field. It is based on the well-known physical phenomena of capillary attraction. Dr. Coplans points out that if one end of a cotton or asbestos wick is dipped into water, the water rises throughout its substance, though, owing to imprisoned air, the rate of rise may be very slow. When the water has risen to a sufficient height in the wick to permit the adjustment of an overhang, dripping takes place from the free end. Columns of liquid have united within the fibres, and the action of flow and discharge from the free end of the wick is essentially the result of internal wick-syphonage. If, as a preliminary, the wick be plunged into boiling water, the contained air—a potential air-lock—is expelled and the wick immediately becomes thoroughly moistened. The wick may then be gently pressed to expel the excess of water. If the moistened wick be now arranged so that one end is immersed in liquid contained in a vessel, and the free end overhangs the outside of the vessel to a level below the level of the liquid contained within the vessel, wick-syphonage is immediately set

[1] THE LANCET, 1925, ii., 826.

up, and clear liquid discharges from the free end of the wick, the drip being maintained so long as the free end overhangs below the level of the liquid contained in the vessel. For details of the special application of wick-syphonage to the purification of vaccine virus Dr. Coplans's paper must be consulted. For this purpose he uses cotton wicks free from asbestos (which apparently arrests the virus in the process of syphonage) 1 in. in diameter and 7 to 8 in. in length. In the process of freeing the vaccine virus from epithelial and other tissue by wick-syphonage, a slime deposit always forms rapidly upon the surfaces of the submerged portion of the wick. Indeed, a potent syphonate is more rapidly obtained when a very large surface of wick plentifully slime-coated is submerged. The slime deposit, which consists of epithelial and other tissue containing the virus, is not intended to function as a bacteria-arrester. The lymph used in these experiments had been previously rendered free from pathogenic organisms. The first syphonate, consisting of the wick "retention fluid," must always be discarded. In the experiments for the freeing of the vaccine virus from calf lymph containing 50 per cent. glycerine, it was found that the establishment of maximal potency of the wick syphonate did not occur until after the wick had been functioning for one week at least. The potency of the liberated virus was subjected to stringent biological tests, rabbits inoculated intravenously therewith developing generalised vaccinia.

We call attention to this device because the virus of vaccinia is being closely investigated just now by many groups of workers. Its specific lesions are so readily produced on the skin of a rabbit that it is comparatively easy to work with, and for this reason may prove a useful guide to the elucidation of other viruses far more difficult to study experimentally while of greater pathogenic importance.

THE LEAGUE OF NATIONS AND THE TRAFFIC IN OPIUM AND DANGEROUS DRUGS.

THE Advisory Committee of the League of Nations on the Traffic in Opium and Dangerous Drugs recently held its eighth session in Geneva under the chairmanship of M. Bourgois, the French representative. Germany, China, Great Britain, India, Japan, Netherlands, Portugal, Serbia, Siam, and Switzerland were also represented. Mr. Pinkney Tuck, instructed by the United States, attended in an unofficial capacity, and Colonel Arthur Woods, a former police commissioner of New York, took part in the proceedings for the first time as an assessor. It appears that the Geneva Convention of February, 1925, which it was claimed would "accelerate from day to day and from month to month" the control of the dangerous drug traffic, still lacks ratification by the ten Powers (including seven of the States Members of the Central Board, two of which must be members of the League Council) without which that convention cannot come into force. Meanwhile the Committee received sinister reports of the confiscation of very large quantities of opium and drugs in the course of the extremely serious illicit traffic which is going on. The Committee again announce, what indeed was common knowledge when the first Hague Opium Conference assembled fifteen years ago, "that the quantity of drugs manufactured is considerably in excess of medical and scientific requirements." The Committee accordingly thought it wise to confine itself to examining the situation in the light of The Hague Convention of 1912, which is the only international instrument for control of the traffic in drugs of addiction now in operation. Turkey has at length ratified that Convention; reports were considered from several signatory countries from which it appeared that exports of opium from the Persian gulf were still seriously excessive, that consignments of scheduled drugs under forged labels is not uncommon, and that smuggling by post to the Far East calls for repression.

As pointed out in THE LANCET of Nov. 20th, 1925, the Geneva Conferences failed to adopt the principle, advocated by the American delegation, of limitation of production of opium or to medical purposes, and at the same time postponed the operation of the requirement of The Hague Convention to suppress the traffic in smoking (or "prepared") opium. Except for the change of policy of the Indian Government, now endorsed both by the Council of State and the Legislative Assembly, there is little progress to be recorded and there is perhaps some apprehension lest the gloomy anticipation of the competent critic of the Geneva Conferences, Mr. Gavit, may prove correct—viz., that the Convention of last year may be "a thing of printed paper with the odds heavily against its ever being anything else."

PARATHYROID EXTRACT IN INFANTILE TETANY.

IN a recent issue of the *Journal of the American Medical Association* (vol. lxxxvi., No. 22) will be found an account by Lynne Hoag and Helen Rivkin of the effect of treating infantile tetany with parathyroid extract (Lilly), which is made up by the method recently introduced by Collip. They found that the treatment is very effective, and that there is a rapid improvement in the symptoms, and that the blood calcium returns to normal within 24 to 48 hours. Their experiments show that an injection of about 5 units of this parathyroid extract per kg. of body-weight gives a rise of about 1 mg. of the serum calcium per 100 c.cm. Five units should be given for a period of about 24 to 36 hours. They, in common with other observers, emphasise the necessity for great caution in the administration of the extract, and point out the necessity for repeated blood calcium estimations. In the same journal, on p. 1683, there is an account of the treatment of pulmonary tuberculosis by injections of this hormone. The writers, Burgess Gordon, Jesse L. Roark, and A. Kenneth Lewis, maintained a serum calcium content of a series of 60 tuberculous patients at a high level for a considerable period. Their general conclusion was that although some of the symptoms may be benefited, the general course of the disease remains unaffected. The only value in the treatment consisted in its effect upon pulmonary hæmorrhage. This was always relieved, and they conclude that the hormone will be of the greatest value in treating this complication of tuberculosis.

PSYCHOLOGICAL TESTS FOR IMMIGRANTS.

THE late war brought in its train not only a number of social problems, but an increasing possibility of the application of psychology towards their solution. The problem of immigration has been one of the most difficult that the United States have had to face. In early days legislation was designed to control the numbers of incoming persons on the grounds of gross physical ill-health, obvious insanity, and criminality. The war, however, aroused in America as elsewhere a considerable amount of national pride and racial passion, and psychology has been used to justify the selection of immigrants who are regarded as mentally as well as physically fit to enjoy the privileges of American citizenship. Behind this will to select the best that Europe had to offer lurked a certain prejudice in favour of those persons who came from the Northern European countries, to the exclusion of those from the Slavonic and Latin countries. This hypersensitiveness to racial differences is a phenomenon not strange to America, where the colour problem has influenced policy for more than half a century. Dr. B. Boody has recently published[1] a fair-minded and exhaustive review of the entire field of immigration legislation and the medical and psychological investigations that have contributed to the changes in the laws. The procedure at Ellis Island is described, and the writer shows herself not

[1] A Psychological Study of Immigrant Children at Ellis Island. By Berthy Boody, Ph.D. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. Pp. 163. 18s.

only in sympathy with the immigration officials, but with the half-bewildered persons of all ages and nationalities who pass through the barriers into America. The mental tests adopted for the elimination of mental deficiency are given in statistical tables. Binet tests were used together with modifications of the American Army Beta tests. It was found as a result of experiments that the elimination as far as possible of language from the investigations is of advantage, since it is not always easy to convey the idea of tests in different languages; moreover, one language may demand circumlocution or a complex phrase for what is a simple expression in another. The tests used seemed to dispose of the view that there was much, if any, racial difference in intellectual ability or in perceptual acuity. Selection on the whole has to be made on the basis of the individual, and any preconceived notion as to the inferiority of this or that race or nationality has to be reviewed in the light of facts brought out by testing each case under the best possible conditions.

ARSENIC IN APPLES.

MUCH has been heard recently of the presence in or on apples of appreciable quantities of arsenic which has remained there to the prejudice of buyer and seller alike after the use of insecticidal spray. A recent paper [1] by Dr. F. T. Shutt, Dominion Chemist, is of value in clearing up the issue. In this paper, entitled the Examination of Canadian Sprayed Apples for Arsenic, Dr. Shutt describes the results of his examination of 43 samples of apples grown in Nova Scotia, Quebec, Ontario, and British Columbia. In half of the samples he was unable to detect any arsenic at all; about one-sixth contained traces of arsenic in a proportion of less than 1/10,000th of a grain per pound; and in the remaining third arsenic was present to the extent of 1/10,000th to 1/190th of a grain per pound. For the purpose of this analysis he examined only the skin, calyx, and stalk, for he states "it is generally agreed that the flesh of the apple is practically free from arsenic, even though 'ponderable amounts' of this poison may be present on the skin." Dr. Shutt points out that, even where the maximum amount of arsenic was found, it would be necessary to eat three pounds of raw apples at a time in order to ingest the minimum medicinal dose of arsenic.

A POST-GRADUATE HOSTEL FOR LONDON.

AT the invitation of Sir D'Arcy Power a meeting was held at the Imperial Hotel, Russell-square, on Tuesday afternoon, July 6th, to consider the formation of a Post-Graduate Hostel, to be a centre of welcome for medical visitors to London. It is doubly a point of honour with the medical profession in London that such a material assistance for entertaining the stranger within our gates should be instituted, for not only do they desire to be the hosts of colleagues from abroad, but in many instances they have been the recipients of kindnesses abroad—return for which there is no opportunity of affording. Visitors from our colonies and from other lands do not obtain in London fitting opportunities for interchange of views with our professional men; seldom do they have time to visit, professional and private courtesies, though freely offered, as we know, cannot be organised. If a hostel is instituted it will be possible to arrange that provincial as well as London exponents of our science and art should meet overseas visitors in a regular manner and to mutual advantage. It is proposed that at the hostel there should be opportunities for interchange of opinions without the medium of lectures, although different speakers will be put forward to deal with various aspects of disease in order to initiate discussions. In the first instance the premises of the hostel will be two large rooms placed at the disposal of the organisation by the Imperial Hotel, so that visitors can have a centre of social exchange. For the present it is proposed to hold discussions in the shape of symposia three or four times a week. Visitors will pay the ordinary hotel prices, but will be free of the two rooms at any time.

The provisional committee of the movement consists of Sir D'Arcy Power, as president; among the vice-presidents being Dr. Alfred Cox, representing the B.M.A.; Sir StClair Thomson and Mr. H. J. Patterson representing the Royal Society of Medicine; Sir G. Lethal Cheatle and Sir Thomas Horder. Dr. A. P. Birtwistle will act as director. Approval of the scheme has been expressed by many professional leaders in different parts of the country, and it is intended that a vice-president shall be obtained representing every English-speaking medical school and the more important foreign schools.

SIR WILLIAM MACEWEN.

AT the recent commemoration of its founders and benefactors the University of Glasgow honoured especially the memory of Sir William Macewen, and to Prof. Archibald Young fell the task of delivering an oration on the life and work of his predecessor in the Regius Chair of Surgery. This oration has now been published[1], and repays study, because in telling of Macewen's achievements Prof. Young has given an idea of his personality; in describing the work which had far-reaching results he has not forgotten to indicate the sacrifices which made that work possible. The whole of this great man's life, says Prof. Young, was work—purposeful work. He could not be imagined doing anything merely to pass the time away, and he had determined to devote all his powers, unceasingly and without rest, to making advance in orderly fashion along the line of progress. Macewen, as is clear from Prof. Young's admirable portrait, had the capacity for taking pains which may or may not be called genius, and he let slip no chance of gaining knowledge in whatever occupation he was engaged. Since his observations were accurate and his conclusions never drawn without meticulous examination of all the evidence, he was naturally confident in his opinions and unwilling to modify them. For the same reason they seldom needed modification, and most of his theories and careful methods are embodied in the practice of surgery to-day. Although Macewen had the attitude of philosophic doubt proper to a scientist, in such a man this attitude could never be confused with the philosophic vagueness which often passes for it. His mind was well equipped, and to this mental efficiency he added the energy and the virility of a leader able to get the last ounce of work out of his assistants, because he gave the last ounce himself. Such a man—such a type—is a natural response to the demands which research and practice began to make last century, and of Macewen's services to humanity there can be no doubt. Every student ought to be familiar with his name, because it is attached to instruments and technique which are in daily use; whilst every surgeon, as he mechanically goes through the ritual of aseptic operations, is making use of methods Macewen did much to introduce. He elaborated and made intelligent the surgery of bones, and he laid many of the foundations of cerebral surgery. In these things he deserved well of those who follow him, and his reputation is assured. "He was a great man," says Prof. Young—"one of the world's great men." But, Job has said, that great men are not always wise, and Macewen suffered in a way which Prof. Young points out. "He earned respect, he excited admiration, in virtue of his energy, his industry, his originality of thought, his brilliant research. He kindled in his students and in his assistants something of the spirit of investigation with which he was himself so richly endowed. It is

[1] The Analyst, June, 1926.

[1] Sir William Macewen: An Oration. By Prof. A. Young. With a photograph of the memorial bust. Glasgow University Publications IV. Glasgow: Jackson, Wylie and Co.

extremely doubtful, however, if he ever could be said to have gained—or even if he desired to gain—the affection of those who were his most loyal helpers . . . which was to be regretted all the more that such affection could easily have been his." This was the defect of his qualities, and was possibly an inevitable corollary of the singleness of purpose which made his life so productive. Such a man's victories, and their cost, cannot fail to be interesting, and Prof. Young has done a service by presenting so lucidly his own impressions of them.

THE HEALTH OF THE ARMY IN 1924.

DURING and immediately after the war the annual reports on the health of the Army fell into arrears, but the report for 1924, now issued, brings the series nearly up to date. Unfortunately, it is the last to be signed by Sir William Leishman, under whose régime as Director-General these reports have been made more useful than they were before. The total number of persons concerned remains almost the same as in 1923. Amongst officers there was an increase in the death-rate from 3·93 per 1000 to 5·86, but the health of the 192,283 other ranks improved. Their total admissions amounted to 484·7 per 1000 during the year, malaria being the most frequent single cause, and their general death-rate was 2·80 as compared with 2·84 in 1923. Influenza caused more deaths than previously, but the figures for general injuries, dysentery, malaria, tubercle of lung, and digestive disorders all showed a diminution. Fewer men had to be invalided—principally because there were fewer cases of middle-ear disease owing to greater care in recruiting and the provision of otoscopes in recruit inspection-rooms; and invaliding for tubercle of all kinds was reduced from 1·34 per 1000 to 1·03. As regards particular diseases it may be noted that there were 210 cases of enteric, 16 of encephalitis lethargica, and only 14 of alcoholism. Kala-azar was successfully treated with "Von Heyden 471," even in cases which had become refractory to tartar emetic. The incidence of malaria increased from 68·7 to 71·0, but the death-rate was reduced from 0·14 to 0·08; each case, moreover, lasted a shorter time and there were fewer constantly sick. In 84 per cent. of cases the parasite was recognised microscopically, as compared with 63 per cent. in 1923. Amongst officers as amongst men, malaria is the commonest cause of admission to hospital, but there were only 290 cases as against 365 in the previous year. In the treatment of pneumonia anti-pneumococcal serum gave less hopeful results than previously. Tubercle accounted for 1·5 admissions per 1000 compared with 1·8 in 1923. There were 39 fewer cases altogether and 57 fewer invalids; the admission rate on the Rhine dropped by 50 per cent. The incidence of venereal disease was slightly reduced, from 56·4 per 1000 to 47·8, and on the Rhine it fell remarkably from 136·3 per 1000 to 38·4; this reduction was most noticeable in syphilis, against which self-disinfection seems to be relatively more successful. Twenty per cent. of infections in the Army at home are contracted on leave, when prophylaxis is apt to be neglected; at Quetta only two men contracted syphilis in a series of 4788 cases in which preventive treatment was given. Special research on the electrical treatment of gonorrhœa is still going on, but is incomplete. An interesting outbreak of typhus fever (with a Weil-Felix reaction) occurred in six men with no lice who were living an open-air life and were well fed. They were non-infectious, but had been associated with herdsmen on grazing land, and possibly they were infected by ticks. It is found that in modern barracks there are fewer cases of tonsillitis than where the accommodation is less satisfactory. There have been fewer cases of scabies and the average length of treatment has been reduced to six and a half days. Post-anæsthetic vomiting has greatly diminished since vinegar inhalations have been given at the end of anæsthesia. Operating rooms and out-patient rooms are being improved and given better equipment as funds become available. Rejection of recruits at entry and six months after entry have been reduced by special education of the recruiting officers. The chief cause of rejection was loss or decay of teeth. The number of teeth treated per person has increased from 3·48 to 4·18, and in India the proportion conserved has approximated to the home standard of 70 per cent. Correlated with this dental care there are fewer admissions for diseases of the teeth and gums, for tonsillitis and for "other digestive disorders." A new feature of the report is the daily sick-rate for Woolwich cadets. This is given as 27·17, which compares unfavourably with Sandhurst (13·22); but the difference, at any rate partly, is accounted for by the frequency of local injuries at Woolwich.

SANOCRYSIN TREATMENT IN SPAIN.

IN an article recently reprinted from the *Revista Medica de Barcelona*,[1] Dr. Luis Saye, supernumerary professor to the Barcelona Faculty of Medicine, gives the results of treating 32 cases diagnosed as pulmonary tuberculosis with Mollgaard's sanocrysin, supplemented in some cases by his serum. All the patients were treated in hospital and many different clinical types were included. Dr. Saye's method was to give an initial dose of 0·1 to 0·15 g. (according to weight) intravenously, and before giving a second dose he waited until the effects of the first had passed off. Gradually the amount given was increased up to 1·0 g. or even 1·5 g., but the intervals between doses were also lengthened, from about five days to 10 or 12. In severe febrile cases the quantity was increased more slowly. The serum was used when there was shock or severe albuminuria, or where large doses of sanocrysin were given to feeble people, but the author expresses no clear opinion on its value. The symptoms noted were as follows. Nausea and vomiting occurred at the time of injection in some cases; later on there was a febrile reaction of varying intensity and duration, and all the patients developed albuminuria at some stage, although it was rarely severe. Other untoward symptoms were digestive disturbance, stomatitis, and exanthemata. In only one case was severe shock observed, and this passed off in a few hours. Although bronchitis sometimes appeared no appreciable metastatic focus was observed during the course of treatment, and in many patients the lesions were appreciably reduced. Dr. Saye classifies his results as: (1) negative—by which he apparently means unfavourable, 3 cases; (2) nil, 6; (3) improved, 6; and (4) greatly improved, 17. His report includes full synopses of all the cases, and, in some of them, X ray photographs showing the condition of the lungs at various stages. There are also numerous charts giving temperature, weight, and blood counts. Emphasis is laid on the necessity for regulating the treatment according to careful observations of each individual patient; no fixed rules, says Dr. Saye, can be laid down for the amount of the doses or the lengths of interval between them. He considers that sanocrysin has a specific effect on the tuberculous process and that there are wide indications for its employment, but that does not, of course, justify neglect of other therapeutic measures such as rest, diet, fresh air, and, when indicated, artificial pneumothorax. Much labour was evidently spent in drawing up this report which must be considered a solid contribution to the literature of sanocrysin. All the facts and figures seem to have been carefully sifted.

[1] October, 1925.

BELGIAN MEDICAL TOURS.—The *Bruxelles Médical* has arranged a series of tours in August and September to the Canary Islands, the ports of France, and to the Eastern Mediterranean. Particulars may be had from the Bruxelles Médical at the Office Belge des Compagniês Françaises de Navigation, 29, Boulevard Adophe Max, Brussels.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXXX.—THE TREATMENT OF CATARACT.

CATARACT may be classified as (*a*) progressive, (*b*) stationary. The progressive group includes the following subgroups: (1) Senile. (2) Complicated: (*a*) general disease—e.g., diabetes; (*b*) ocular disease—e.g., irido-cyclitis, retinitis pigmentosa, retinal detachment, choroiditis. (3) Occupational, from excessive heat, as in glass-blowers. (4) Trauma, from perforating injury or contusion. The stationary group may be: (1) lamellar; (2) congenital (total, axial, dotted, coralliform); (3) capsular (anterior from corneal ulcer in ophthalmia neonatorum, posterior from developmental defect).

Only the more important among these classes are here considered.

Senile Cataract.

The ophthalmoscopic appearances of incipient senile cataract are as follows:—

(*a*) Radial striæ, dark sectors with the apices towards the centre of the pupil. (*b*) Coarse masses of opacity in the peripheral cortex, often behind the lower part of the iris. (*c*) Opaque meshwork in the pupillary area, increasing to a perinuclear opacity. (*d*) Saucer-shaped opacity in the posterior cortex, spreading towards the periphery.

A progressive cataract may be labelled *senile*, if (1) the anterior parts of the eye appear normal; (2) the pupil reacts well to light; (3) good perception and projection of light are present, and any visible fundus is normal; (4) it is bilateral or incipient in the second eye; (5) other causes are absent.

Course of Incipient Senile Cataract.—The type with fine radial striæ progresses very slowly. In other types it is unwise to prophesy; the condition may remain stationary for some years, and the vision may even clear slightly without any treatment; but it may also fail rapidly in a few months.

Mature Cataract.—In mature cataract (1) vision is reduced to hand movements; (2) the red reflex with the ophthalmoscope from the fundus is absent or nearly so; (3) the whole of the anterior surface of the lens is grey when viewed by oblique illumination.

Medical Treatment.

Where the opacity is central, mydriasis may assist the vision, and homatropine, 1 per cent., or atropine, ¼ per cent., may be used; but a watch must be kept that the intra-ocular tension does not rise. The former drug should be used at first, as it can be counteracted by eserine should the tension increase.

From time to time various forms of treatment are vaunted as staying the course of senile cataract and as clearing it. It is doubtful whether any of them has the slightest effect; accounts of beneficial result are to be looked upon with suspicion. The biochemistry of the lens is still in an embryonic stage, and the ætiology of senile cataract is still sub judice. This subject is one of the many in which it is difficult to maintain a true balance between the claims of new remedies, which may be of real therapeutic value or may be tinged with chicanery. To have any chance of success they must be tried in the early stages of the disease, at a time when the patient may be unaware of any visual defect, apart from the need for glasses. Now, it is inadvisable to inform the patient of his condition at such a stage, because (1) treatment is nearly certain to be useless, (2) the condition may remain unchanged for many years, (3) the fear of impending blindness may cause needless prolonged depression. In cases where the diagnosis has to be declared, there can be no harm in trying some form of treatment, though a warning note should be sounded as to its probable inefficacy, and the prolonged period over which it must continue.

Among the treatments given are the following: (1) Solutions of potassium iodide in increasing strengths, used in an eyebath for five or ten minutes several times a day. (2) Dor's ointment, "calcic-alkaline-iodide," well massaged into the conjunctiva twice daily. (3) Extract of parathyroid gland, by the mouth, in doses of 1/10 gr., twice daily.

Surgical Treatment.

Mature Senile Cataract.—Some surgeons do not advise the extraction of a mature cataract if there is good vision still in the other eye. I consider this to be wrong for the following reasons: (*a*) The stage of maturity is the best for operation; if left to become hypermature, the capsule may become thickened and give rise to difficulties. (*b*) The patient's recuperative powers get less as age advances, though octogenarians often do well. (*c*) The unilateral loss of visual field is restored. (*d*) A successful result ensures the patient against a blind old age.

Immature Senile Cataract should be removed from one eye, where the visual disability of both is such as markedly to handicap the patient in his vocation. In most cases of extraction of immature cataract the lens comes away, leaving but little residual cortex, and a rapid convalescence and restoration of vision result. There is, however, a danger of clear cortex adhering to the capsule, and this will become opaque and take some time to be absorbed. It may even set up iritis and secondary glaucoma, though this is not often of a serious variety.

Bilateral Extraction.—Should operation on the second eye be performed, if that on the first has been successful? A man can see better with two eyes than with one, and in comparatively young persons (under 60 and healthy) I advise extraction of the second cataract when it is approaching maturity. But for patients whose prospect of life is not long, the risk and discomfort of the second extraction is hardly worth while. My practice is to discuss it with the patient, and to operate only if he is insistent.

Results of Operation.—In experienced hands the visual results of uncomplicated cases are very satisfactory. Some 85 or 90 per cent. can read ordinary print with strong convex glasses (about 14 D), and require about 11 D for distance.

Diabetic Cataract.

In most cases this variety is senile cataract occurring in a diabetic. Diet and insulin treatment would appear to have no effect on the course of the cataract. The prognosis of the result of operation is almost as good as in the simple senile variety. Iritis and hæmorrhage are occasional sequelæ, but seldom prevent a final good result. Patients have died in coma after cataract extraction, and therefore, if acetone or diacetic acid is present in the urine, proper dietetic treatment should be instituted and the patient be stabilised in his new régime before operation. To old patients who are much wasted by diabetes, and who refuse to diet, a dose or two of insulin may be administered as a preparation to operation.

Other Types of Cataract.

Glass-blowers' Cataract.—These cases are said to do well with extraction.

Traumatic Cataract.—Occasionally a contusion opacity (of the posterior rosette type) will clear in a month or two, and an opacity along the track of a foreign body may also resolve. As a rule, traumatic cataract will require removal, but it is often associated with damage to the iris and ciliary body, and excision of the globe may be necessary for the avoidance of sympathetic ophthalmia. These cases may give rise to much anxiety.

Lamellar Cataract.—The lens should be removed if the opacity is so large and dense that a vision of 6/18 cannot be expected. If the opacity is small and central, an optical iridectomy may be considered.

Bilateral Complete Congenital Cataract.—Operation should be early, to assist the development of the retinal macula. Some mental deficiency is often present.

Methods of Lens Removal.

Discission.—In children and young adults up to the age of 20 or 25 the lens is soft and is removed by tearing the anterior capsule with a discission needle; thus the aqueous obtains access to the lens fibres, and gradual solution occurs. Sometimes the fibres swell up excessively and necessitate a corneal incision for their removal (curette evacuation.)

Extraction.—With increasing age the hard nucleus includes more and more of the lens substance and is insoluble in the aqueous. In patients over 40 it has to be removed en masse. Some Anglo-Indian surgeons and a few continental operators extract the lens in its capsule. Most ophthalmic surgeons prefer to leave the capsule in the eye, delivering the lens from within it. They hold that this is the safer method, with less likelihood of vitreous loss. It has the disadvantage that a second operation (needling) is sometimes necessary, to cut a gap through the capsule left in the pupil. The steps of the operation are:—

(*a*) *Anæsthesia.*—Five per cent. cocaine drops are instilled at five minutes intervals for 30 minutes.

(*b*) The *incision* is made with the narrow Graefe knife by puncture, counter-puncture, and one or two sawing movements. It should be placed just outside the corneal margin, and should involve two-fifths of the circumference. A small flap of conjunctiva should be left at the top.

(*c*) The *capsule* may be divided by the knife as it passes from puncture to counter-puncture during the incision, or it may be divided afterwards by the cystitome.

(*d*) *Extraction* of the lens is performed by pressing the lower part of the lens backwards and upwards by means of some blunt instrument such as the back of a lens curette. Slight pressure on the posterior lip of the wound assists the upper edge of the lens to tip forward and present. The lens is then coaxed out slowly by gradual pressure from below, aided, if need be, by the point of the cystitome above.

(*e*) *Iridectomy.*—A small portion of iris is next snipped off, leaving the pupillary margin intact (peripheral "button-hole" iridectomy). If a complete iridectomy is desired, it should be made after the incision. Many surgeons dispense with iridectomy (simple extraction).

(*f*) By *replacing the iris* with an iris repositor, the pupil is rendered central, and the conjunctival flap is then stroked into position over the wound.

The Chief Complications of the Operation.

(1) *Loss of Vitreous.*—This is serious, although after it many cases regain a vision of 6/18 or 6/12. It gives an added danger of detachment of the retina, which usually results in blindness.

(2) *Acute Infection.*—This is nowadays rare, and is guarded against by surgical cleanliness, by proper irrigation of the conjunctiva before commencing the operation, and by a preliminary culture of the conjunctival secretion (to exclude the presence of pyogenic micro-organisms). Its occurrence usually necessitates excision or evisceration of the globe.

(3) *Prolapse of the Iris.*—This may occur during the first 24–48 hours, and for this reason the patient should be kept quite still for the first few days after the operation. If it occurs, the prolapse must be cut off as soon as possible. As a rule, no permanent harm accrues. Prolapse is less likely to take place if an iridectomy has been done.

(4) *Capsule Strands in the Wound.*—These are impossible to see at the time of operation, and if included in the scar are a source of irritation and secondary glaucoma. They are more likely to get caught with complete iridectomy. If a simple extraction or one with peripheral iridectomy is done, the capsule gets swept away from the wound by the pupillary margin of the iris, as it is replaced by the iris repositor.

After-Care.

Both eyes should be bandaged for 24 hours. The eye may be examined in 24–48 hours and a drop of warm atropine (1 per cent.) instilled. The patient should be kept in bed for six or seven days. The average length of stay in hospital or home after the operation is 14 days. Needling, if necessary, should be performed as soon as the eye is free from congestion.

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Special Articles.

PENSIONS FOR HOSPITAL OFFICERS AND NURSES.

As was noted last week, at the Sixteenth Annual Meeting and Conference of the British Hospitals Association the proceedings opened with a paper by Mr. Herbert L. Eason (superintendent of Guy's Hospital, London) describing the movement to provide pensions for hospital servants and giving a critical summary of the scheme now approved by the King Edward's Hospital Fund for London. This scheme was set out in THE LANCET of March 27th (p. 679) and April 3rd (p. 972).

Mr. Eason said that the question might not have reached its present stage if it had simply been one of pensions for those employed at individual hospitals; what made coördinated action immediately important to the hospitals themselves was the fact that the present system checked the movement of officials from one to another—whereas migration should be the characteristic feature of a hospital officer's life. It had been for this reason that the Whittall Committee had come to the conclusion that a Federated Superannuation Scheme on the lines of the Federated Superannuation Scheme for University Teachers was the proper solution of the problem. After considering the varieties of insurance pensions schemes it had rejected all the mutual schemes and decided in favour of the insurance method. A conference, at which were representatives of the British Hospitals' Association, the Hospital Officers' Association, the College of Nursing, and the King Edward's Hospital Fund for London, had resulted in the publication in November last of a draft scheme of pensions for hospital officers and nurses. This had been submitted to hospitals generally and many of them had been represented at a conference called by the King's Fund in London in May where differences of opinion were discussed. On May 14th the Council of the King's Fund had approved, amongst others, the two following resolutions:—

1. That, in making annual grants to maintenance to hospitals on its list at the ordinary distribution, the King's Fund should take into account (subject to such conditions as may be approved by the management committee) the amount spent by a hospital on an approved contributory pensions scheme, including amounts spent in respect of existing officers and retired officers.

2. That the assistance offered by the King's Fund should be on the following scale—viz., a maximum sum for seven years of £20,000 a year, or 25 per cent. of the expenditure of the hospitals on the approved scheme, whichever is the smaller; this amount to be provided as far as possible by means of contributions obtained by a special appeal in selected quarters and to be increased if sufficient funds are realised by such appeal.

On June 10th the King's Fund had written to the hospitals which showed sympathy with the proposals, enclosing an outline of the pension scheme as approved by the Fund for the purpose of special grants in aid. In its covering letter the Fund stated that it would be glad to know if the hospital in question was prepared to coöperate, and proposed calling a further conference for the purpose early in July. It was this scheme, as now modified, approved, and made public by the Fund, that Mr. Eason intended to discuss.

The Present Proposals.

The suggestion was, he said, that the total contribution or premium should be 15 per cent. of salary and emoluments. (Emoluments included meals, board, and lodging at specified rates.) It had been urged that this was too high a premium, but that was purely a matter for actuaries, and the King's Fund, in accordance with hard economic facts, had declined to recognise for purposes of a grant any scheme that envisaged smaller contributions. It was proposed that 10 per cent. of the contributions were to be paid by the hospital and 5 per cent. by the officer or nurse,

but the relative proportions might possibly vary in different institutions. For officers the policies were to mature at the age of 60 and for nurses at 55. The Scheme was to include all salaried staff, administrative, clerical, or dispensing, whose total of salary and emoluments was over £160, and it was to be compulsory for new entrants into the service of the hospital. Where the total remuneration was between £100 and £160 the hospital would have the option of admitting those who wished to join. Although no maximum pensionable salary limit was to be laid down it would be open to an individual hospital to arrange with an individual officer that an increase of salary beyond a specified high level should not carry with it any increase in the contributions of either.

As was well known, said Mr. Eason, male hospital officers were comparatively few in number as compared with the nursing staff, and it was probable that if the pension scheme had referred to hospital officers alone, there would have been much less criticism and much less apprehension as to the financial burden on hospitals in future. As a matter of fact, the Scheme as applying to hospital officers had been generally approved, and it had been agreed that if an officer migrated within the hospital service, he should take the benefit of both contributions with him to his next institution; that if he left hospital service altogether within ten years of joining the Scheme, he should take the benefit of his own contributions only; and that if he left hospital service altogether after ten years he should take the benefit of both contributions. Policies were to be taken out with insurance companies and the officer or nurse was to have the choice of alternative benefits—e.g., endowment assurance policies with profits or deferred annuity policies.

Nurses' Pensions.

Mr. Eason then proceeded to discuss the Scheme as it affects nurses. It was, he said, to include all female professional nurses, whether nursing the sick or doing work under a public authority, and it was to be compulsory for new entrants to a hospital's service to join it or continue membership if already members. The complete scheme included all probationers after one year's training, but it would be open to each hospital to decide whether to admit them then or only after their names were placed on the State Register. It was over the question of nurses' pensions that there had been most discussion, but the attitude of the nurses' representatives had been quite definite. The College of Nursing urged that the nurse's life was a short one. Often she did not begin her career till the age of 20 or later, and she was worn out and should become pensionable at the age of 55. Her pension would be smaller than that of the hospital officer because her active career was shorter and because female annuitants lived longer than male. The representatives of the nurses therefore asked that contributions towards nurses' pensions should begin as early as possible, and suggested that hospitals and probationers should begin their payments as soon as the probationer started training.

Objection to this, continued Mr. Eason, might be taken on three grounds: (1) That a contribution of 10 per cent. on salary plus emoluments for every nurse during the whole period of her training imposes too great a burden on the hospital; (2) that a contribution of 5 per cent. is too much for the nurse to pay; and (3) that there is no claim on the hospitals to contribute in respect of pensions for probationers as they are only students in training. As regards the first objection every hospital should calculate for itself what would be the total cost of premiums in respect of its whole nursing staff, and then convert this cost into a percentage of the annual expenditure of the hospital. He had estimated that if Guy's Hospital were to make these 10 per cent. contributions in respect of every hospital officer eligible under the Scheme, and every probationer, trained nurse, sister, or member of the female administrative staff, the total cost of the premiums would be between 2·5 and 3 per cent. of the hospital's annual expenditure, and he could not help thinking that the public—upon whom the hospitals really depended for support—would not consider 3 per cent. of the total annual expenditure an excessive amount to pay towards the pensions of those who were, in fact, doing the greater part of the hospital work, excluding the medical service. At the present time there was difficulty in obtaining probationers in hospitals, and it might be worth while to consider which in the long run would be more expensive—to pay pension premiums for nurses in training, or to run short of probationers and be obliged to staff the hospital with trained nurses. The second objection, that it was impossible for a probationer in training to afford the 5 per cent. of her salary and emoluments, was a dangerous argument to use, since the immediate inference to be drawn was that the probationer is paid an inadequate salary. If attempts were made to justify this inadequacy on the ground that nurses receive their training and are paid for it as well, this argument would immediately be met with the retort that in return for her training the probationer does about 80 or 90 per cent. of the hospital's nursing work and thereby saves the hospital large sums of money. As long as she was doing this, he thought it almost impossible to justify a salary inadequate for the payment of the nurse's contributions towards her pension. The representatives of the nurses had also pointed out that at no period of her life would the nurse be in such a favourable position to pay her own premiums; as a probationer her financial needs were practically limited to clothes to wear outside the hospital. Personally, Mr. Eason felt that early contributions by hospitals towards nurses' pensions would be one of the strongest inducements to women to take up nursing as a profession.

Details and Difficulties.

Other questions, he continued, arose in connexion with nurses' pensions. When should they commence? After how many years' service should a nurse be entitled to carry away both her own and the hospital's contributions? Probably few hospitals would agree to start the premiums immediately a probationer entered the hospital service, as it was a matter of common experience that many nurses left during their first year. If, however, a nurse settled down at a hospital for a year, there was a strong presumption that she would complete her training, and he thought, therefore, that hospitals would be well advised to commence premiums at the end of the first year of training. The question when a nurse should be entitled to carry off both her own and the hospital's contributions required careful consideration. From figures of one London hospital it appeared that out of 500 consecutive nurses who joined the hospital, nearly 40 per cent. were married ten years after they had entered. As a matter of fact, the great majority of nurses who married did so within five years or so of leaving the hospital, and it was suggested, therefore, that all contributions should be held in reserve or in trust by the hospital until the nurse had been five years in the practice of nursing, after she had completed her training; until then the hospital would retain its own contributions and she would be entitled to take away only her own. If, after five years, the nurse was still nursing, whether in an institution or in private nursing, the hospital would assign to her, or whatever organisation was acting as her trustee, both her own and the hospital's contributions.

Hospital governors might also say: What concern is it of ours to start making contributions towards the pensions of our probationers, the great majority of whom, at the end of their training, will leave the hospital and will never be seen by us again? The answer to that question was that it does not matter to the hospital what happens to the nurse after she has left it. The contributions made by the hospital while she was in training or while serving the hospital as a trained nurse would provide her with a certain pension at her retiring age, which pension would, of

course, be in addition to any pension to which she might be entitled should she join any other service which provided a pension. It should be remembered that nursing was a very arduous profession—that a number of nurses broke down during their nursing career—and that at the end of their nursing life many nurses were at the present day in absolute want. Of all appeals to the charitable public a claim for additional support for the purpose of providing pensions for nurses would, he believed, meet with the readiest response.

It must not be forgotten also that in London at any rate, the King's Fund had stated that it was prepared to make a grant up to 25 per cent., not only towards the premiums for pensions for hospital officers and nurses who would in future join the scheme, should the hospital participate, but also in respect of pensions already being granted by the hospitals, and of those which might in future be granted by the hospitals to those hospital officers and nurses who, by reason of seniority and length of service, were ineligible to join the present scheme.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

LAYING OF THE FOUNDATION-STONE.

IN 1921 a committee was appointed by the then Minister of Health, with the Earl of Athlone as chairman, "to investigate the needs of medical practitioners and other graduates for further education in medicine in London, and to submit proposals for a practicable scheme for meeting them."

This committee made two main recommendations: one for the development of the work of post-graduate medical education generally in London, and the other for the setting up of what they called an Institute of State Medicine, to be established by the University of London, in which instruction should be given in public health. The latter recommendation happily synchronised with proposals which the Rockefeller Foundation had in mind for establishing in London a great school of Hygiene and Tropical Medicine. They were impressed with the needs of the situation as set out in the Athlone Committee's report, and they made their now well-known offer of two million dollars to the British Government for the building and equipment of such a school. This offer was accepted and the Government assumed the necessary responsibility for the school's adequate maintenance when it was completed.

The London School of Hygiene and Tropical Medicine was established by Royal Charter in 1924, and the old London School of Tropical Medicine was taken over in August of that year.

In 1925, after a limited competition, Mr. P. Morley Horder and Mr. Verner O. Rees were appointed the architects of the new building, the foundation-stone of which was laid by the Minister of Health on Wednesday, July 7th, 1926. The elevation drawing of the building which is to be erected (see illustration) shows that it will be a notable addition to the public buildings of the metropolis.

The Scope of the Institute.

In the construction of the building certain requirements had to be met which, together with the extent and form of the site and the funds available, determined the architectural form which the school is to assume.

Provision had to be made for teaching hygiene in all its branches, for instruction in tropical medicine, and for research work in both these subjects, and in any of the ancillary sciences. The balance had to be maintained equally between teaching and research. Both have received sympathetic consideration. As a result, it was finally decided to provide for research one-sixth of the total space available for instructional purposes. This is a liberal allowance when it is remembered that the space devoted to teaching includes a big lecture theatre, numerous roomy classrooms and general laboratories, together with the library, a very large museum on two floors, tutorial rooms, and other accommodation. The number of students which the school is intended to accommodate is 250. Of these, it is considered that 100 will be engaged upon the study of tropical medicine, a figure based on the present attendance at the course given in the tropical division at Endsleigh-gardens, where there has of late been an average of nearly 70 per session. The remaining figure, 150, representing students studying for diplomas or degrees in public health, has intentionally been placed very much on the safe side. At present there are only about 45 students attending courses in London for the diploma in public health, but it is noteworthy that a recovery has taken place from the marked fall in numbers which followed the introduction of the new regulations of the General Medical Council, and there can be no doubt that this increase will continue, although it may be many years before there are as many as 150 aspirants for a public health qualification.

The building, of which the foundations have been laid while a start has been made upon the steel structure, will be situated between Gower-street and Malet-street, behind the British Museum. It will front south upon Keppel-street, and it is hoped that at least the frontage, which contains the main entrance, will be of Portland stone. This Keppel-street elevation will be enriched by a wide fringe composed of wreaths and of the names of some of the great pioneers in hygiene and in tropical medicine. Finality has not yet been reached as regards these names. Over the main entrance there will be a large panel on which the handsome and interesting seal of the school will be engraved. The general shape of the building is that of a letter H, with the Keppel-street front closing the southern end of the H, and the crossbar dividing the enclosed space into two nearly equal courts, one of which, the northern, is not encroached upon, while the other, the southern, is partly occupied by the lecture theatre. This arrangement provides a building singularly well ventilated by natural means and well lighted, while it will be easy to find one's way about it, especially in view of the manner in which the different sections are grouped.

The provisional scheme of studies provides for six main divisions—namely, those of applied physics, physiology and principles of hygiene; chemistry and biochemistry; immunology and bacteriology; medical zoology, including parasitology and comparative pathology; epidemiology and statistics; and, finally, the principles and practice of preventive medicine, general sanitation and administration. This grouping has been retained but, in addition, there has been recognition of the fact that the clinical pathology of exotic diseases forms a most important part of tropical medicine and, accordingly, as will be seen, a special laboratory has been devoted to the joint needs of this subject and of certain branches of tropical hygiene with which, of course, tropical pathology is intimately associated.

It has been decided, subject to satisfactory estimates of cost, to warm the building by the panel system of heating. This is a modification of the old Roman hypocaust method and has many advantages, while its disadvantages and difficulties can, it is believed, now be discounted.

Basement.—The basement, which is really a half basement, contains the lower floor of the lecture theatre, provision for museum storage, library and publications stock rooms, goods reception store, and issue rooms, together with carpenters' and metal workers' shops. Here also will be found the X ray department and the photographic unit, the distilling room, the room for large centrifuges. A spacious post-mortem room is being provided. It is hoped here to conduct autopsies upon animals dying in the Zoological Gardens which often exhibit the lesions of diseases met with in the tropics. At present the School is in close touch with the Zoological Society of London, a member of its staff being pathologist to that Society. The lecture theatre has accommodation for 250 students. Behind it

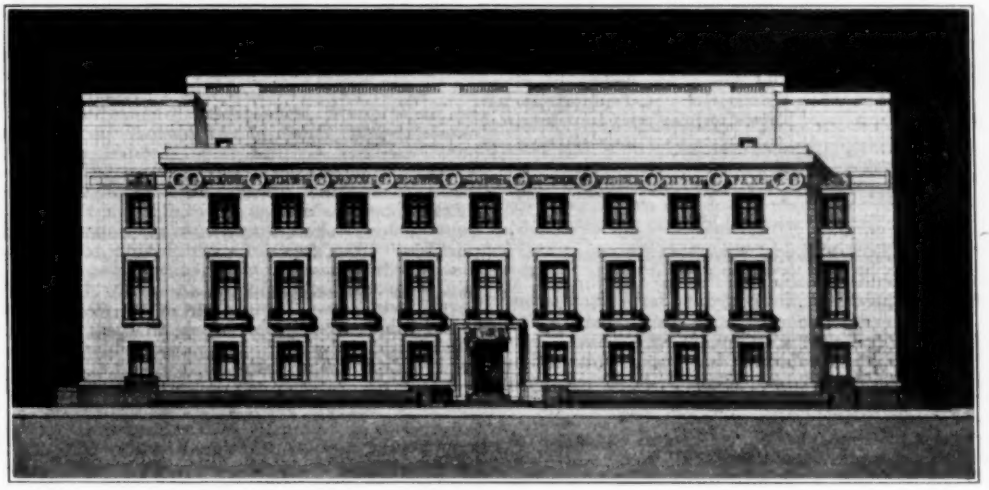
are the lecturers' room and the preparation room. From the latter, cinema, epidiascope, and lantern work will be conducted. Special attention has been paid to the question of acoustics, the elimination of draughts, adequate lighting, and facilities for rendering the theatre dark.

Ground Floor.—The main entrance on Keppel-street leads into a fine entrance hall, from which there is direct access to the lecture theatre. The whole of the front block, facing Keppel-street, with the exception of the Gower-street corner, is utilised for purposes of general administration, the board room receiving special architectural treatment as it will be panelled in oak and ebony. The Gower-street corner houses the professors' common room and writing room. The eastern wing of this floor, facing Malet-street, contains, from south to north, the director's laboratory and a laboratory of sanitary engineering which is intended to be partly a classroom wherein students studying public health will be taught to read and perhaps to prepare plans, will become conversant with the principles of town-planning and will work with rough models of filters and other sanitary appliances with which they should have some acquaintance.

Second Floor.—Here the lower storey of the museum, which will be devoted to hygiene, runs the whole length of the Keppel-street front. In the roof there are three open wells admitting light from above, while it is well lit on the south by windows looking out on Keppel-street and less fully on the north by windows overlooking the north court. There should, however, be ample daylight illumination, and it is important to secure as much wall space as possible. The museum has been granted 15,000 feet of floor space, but, in all probability, this will eventually be found insufficient to illustrate adequately the wide subjects with which it will be concerned.

The rest of this floor is divided between the division of chemistry and biochemistry and that of bacteriology and immunology. The latter has been given the larger share, for there are likely to be more research workers in bacteriology, but there is no great difference in the space allocated to each.

The large laboratory of the Chemical Division in the north-east corner of the building will accommodate 70 students and the biochemical and nutritional laboratory



The new home of the London School of Hygiene and Tropical Medicine.
(Main elevation—Keppel-street front.)

In the crossbar facing north, and thus assured of good lighting, is the laboratory of tropical hygiene, already mentioned, wherein the clinical pathology of the tropics will also be taught. The western wing of the ground floor, facing Gower-street, contains common rooms for the professors and men and women students, and a convenient room for the service of tea and light refreshments. At the north end is a large students' study room, where silence will be enforced. Provision is also made on this floor for the classrooms, for the Division of General Sanitation and Public Health. The student in this division will get a great deal of his instruction outside from medical officers of health, both in urban and rural districts.

First Floor.—The library, which will be a large and imposing room 33 feet wide and 120 feet long, is given the place of honour in the front of the building. To its left front lie the offices of the Bureau of Hygiene and Tropical Diseases, which it is proposed should continue, as at present, a tenant of the School. It is indeed possible that a closer association will eventually develop. Immediately behind the library access is provided to the flat roof of the lecture theatre, which will be laid out as a garden court. The west end of the library is bounded by an ample periodicals room, for it is intended that the current literature shall be separately housed and made readily available for consultation. This room communicates with the library and both can be thrown open, together with the above-mentioned roof-garden, on the occasion of large social or scientific gatherings. The rest of this, the west wing, is entirely occupied by the Division of Epidemiology and Statistics and contains a laboratory, card-index room, study rooms, and staff quarters. The whole of the crossbar of the H is devoted to the Division of Applied Physiology, as is the northern half of the east wing of the building. This division is likely to be closely concerned with the problems of industrial hygiene and so, in addition to the X ray department and constant temperature room in the basement, it is provided with a large cross-lighted laboratory, a range of fine research rooms, mostly facing north, a gas room, and a gas chamber.

will take 35. It is hoped that special instruction will be given on the subject of nutrition and that research will be carried out, not only on the nutritional value of foodstuffs, but on their money-value. The biochemist must have his experimental animals alongside him, so a roomy and well-ventilated animal house has been sandwiched in between the biochemical laboratory and the museum. The chemical department has its quota of staff and research rooms and a fine classroom with 90 seats.

The chief feature of the Division of Bacteriology and Immunology is the large bacteriological laboratory which can hold 90 students and has cross lighting and ventilation. There are smaller general laboratories in this division, which also contains a good-sized classroom, media, sterilising and washing-up rooms, hot and cold incubator chambers, research laboratories, and a dark room.

Third Floor—The upper storey of the museum, which will be devoted to tropical medicine and hygiene, runs the whole length of the Keppel-street front and has roof lighting, which, as stated, is communicated to the lower storey by three open wells in the floor. In close touch with this part of the museum are the museum offices and preparation rooms in the west wing. The rest of the floor is wholly given up to the important Division of Medical Biology, and will accordingly absorb the greater part of the work of the old London School of Tropical Medicine, now continued at Endsleigh-gardens as the tropical division of the present School. The large laboratory for this division has provision for 86 students; in addition to cross-lighting, it has a weaver roof. Other rooms which will be shared by the four departments constituting this division are the two large classrooms, the preparation room, the seminar room, the advanced demonstration room, the reading and reprint room, and the insectarium and aquarium.

The greater part of the space will be distributed between the departments of helminthology, comparative pathology, protozoology, and entomology. There are some special features, such as a joint dissecting room for helminthology and comparative pathology, a room for housing the helmintho-

logical collections, a fæces room, adequately ventilated, and a stock room for entomological specimens.

Fourth Floor.—This is a recessed floor, occupying only the crossbar of the H and the southern portion of the Gower-street front. Here are the caretaker's quarters, the artist's room, the cinema preparation room, and also the animal quarters, with exercise court and all conveniences. From the artist's room there runs south a special range of mice quarters.

Fifth Floor.—This is represented by additional accommodation for animals and provision for water tanks and fan chambers. Like the fourth floor, it is recessed from the wall-line of the main building and is of no great extent.

It will be obvious that the structure of the building has been most carefully planned. The design has proved readily adaptable to all the varied and exacting requirements of the several divisions of work, and it may be anticipated that the completed edifice will worthily carry out the intentions of the promoters and the generous conception of the Rockefeller Foundation. It is unfortunate that representatives of the Foundation were unable to be present at the ceremony to hear from the chairman of the board, Sir Alfred Mond, or from the Minister of Health, an expression of the appreciation of the British people of this recognition of London as a fitting centre for a great school of preventive medicine.

MEDICINE AND THE LAW.

The Judicial Value of Technical Assessors.

MEDICINE and seamanship have this much in common that professional experts in both sciences are called in as assessors in courts of law. There is this difference that, except perhaps in workmen's compensation cases, the common law courts get almost all their technical guidance in medical matters from expert witnesses rather than from assessors, whereas the Admiralty courts rely more upon assessors than upon expert witnesses. But in either case, once an assessor is called in, his legal position and authority are the same whether he is a medical or a nautical expert. The medical profession, therefore, may be interested in a recent House of Lords appeal (the *Australia*) where the divergent views of the experts evidently baffled the judges. The President of the Admiralty Court got an answer from his assessors upon which he held a vessel called the *Nautilus* to blame for a collision with the *Australia*. The Court of Appeal was inclined to agree till it got a directly opposite answer from its own assessors; feeling obliged to give effect to this, it reversed the President's decision. The House of Lords in turn consulted its own assessors whose opinion was not exactly unanimous, and reversed the judgment of the Court of Appeal. The dilemma was not unlike that in a case tried in 1919 (the *Melanie*) where Mr. Justice Hill's findings were approved by his assessors, the Court of Appeal followed its own assessors' advice, and finally the House of Lords was distracted by the fact that its two assessors expressed diametrically opposite opinions on each point of substance. Doctors proverbially differ; sailors, it seems, can differ just as widely.

The result of these differences is two-fold. Firstly, Lord Dunedin, in the *Australia* case, tells the Court of Appeal not to think that its assessors are of higher authority than those of the court below. Appeals are from judge to judge, not from assessor to assessor. "There is no hierarchy of assessors." Lord Sumner added that the technical advice given below is available for the consideration of the appellate tribunal as well as that given by its own assessors; the latter are not substituted for those previously consulted; they are additional to them. The second and more general result is that the courts grow more ready to dispense with all expert guidance if the experts' views are so discordant. Assessors, said Lord Dunedin, occupy much the same position as do skilled witnesses except that they are not brought forward as the partisans of one side or the other. Just as in patent cases a judge must make his own choice between two opposing opinions on a technical matter, so the court must make its own choice if assessors disagree. He deprecated questions being put to assessors in a form tantamount to asking them if they would find for the plaintiff or the defendant. Lord Sumner repeated that the court cannot surrender to assessors the judicial function of deciding the issue, however technical it may be. "Authority for the proposition that assessors only give advice, and that judges need not take it but must in any case settle the decision and bear the responsibility, is both copious and old. . . . After all, experience at sea is not everything. Assessors are not chosen for their personal conversance with collisions, and an experienced judge or counsel may boast that he has, in a sense, been in hundreds of collisions while the assessors have hardly seen tens."

Altogether these two cases, the *Melanie* and the *Australia*, have led the law courts for the moment a long way in the direction of discounting the value of the expert's guidance. The court of first instance, said Lord Birkenhead in the former, will naturally be in frequent and informal consultation with its assessors, the Court of Appeal can probably ask its own assessors definite written questions, and then perhaps the House of Lords will not want assessors at all. "Personally," said Lord Dunedin in the more recent case, "except for the purpose of explanation, I shall always ask an assessor as little as possible." He goes on to hint that many technical niceties disappeared when sailing vessels gave way to steamships and that seamanship in avoiding a collision is often a question of common sense. In the light of such observations, medical assessors and experts should perhaps prepare themselves for signs of a judicial revolt against technical leading-strings.

A Claim for Fees.

A recent action in the Bromley County Court illustrates the uncertainty of remuneration for services rendered by practitioners. Dr. Alfred Tennyson-Smith, of Orpington, attended the two daughters of Mr. F. H. Fletcher, a merchant, of St. Mary Cray, in April, 1924. On the 25th of that month he was called to Mr. Fletcher's house at 11 P.M. and found one of the daughters gravely ill, the cause being acute appendicitis and acute peritonitis. An immediate operation being deemed necessary, the child was removed with her father's consent to the Cray Valley Hospital. The operation was performed in a private ward and was completely successful. Dr. Tennyson-Smith had an assistant and an anæsthetist; he also had vaccine prepared, and he paid 28 visits to the child after operation. He afterwards sent in an account for £81, including an operation fee of 50 guineas. On Mr. Fletcher's complaint of the size of the bill, he reduced the operation fee from 50 to 35 guineas to save further trouble and to obtain a settlement. From the account of the county court proceedings in the *Sidcup Times* it appears that adequate evidence was placed before the court to show that the fees charged were reasonable. On the other hand, for the defendant, a nursing-home proprietor in London was called who declared the operation fee excessive. A reasonable charge, in the opinion of this witness, would have been 25 guineas for the surgeon, 10 guineas extra if he had an assistant, and 5 guineas for the anæsthetist, with no extras for visits. His Honour Judge Parry seems to have accepted this standard as he gave judgment for the plaintiff for £42 4*s.* 6*d.* The judge remarked that it was an unfortunate dispute and that it was a pity that the parties could not have met to discuss the matter; he added that the defendant owed a very great debt of gratitude to the plaintiff for the skilful way in which he dealt with the case. So far as can be judged from the newspaper report of the evidence, the defendant had been anxious to

have a London surgeon to operate but was told—no doubt correctly—that there was no time. Mr. Fletcher appears to have resisted Dr. Tennyson-Smith's claim the more tenaciously because there was also a bill of some £35 from the hospital, and, in addition, he had had the expense of a nurse for the child for three weeks.

The case should not be taken as standardising the fee for an operation for appendicitis at 25 guineas. The law courts will take the circumstances of a particular case into account, including the means of the defendant and the professional status of the plaintiff. All that this case decides is that in a particular set of circumstances a county court judge thought he could accept the statement of a witness to the effect that there were many excellent surgeons who would be quite willing to perform the operation which was necessary for the successful treatment of the defendant's daughter for a fee of 25 guineas. That statement could be much challenged.

Reponsibility for Post-mortem Examinations in Hospitals.

According to the *Tunbridge Wells Advertiser* some difference of opinion has arisen locally between the coroner and the staff of the General Hospital. The coroner (Mr. A. H. Neve) has stated at recent inquests that his invariable rule was that the medical practitioner who has been in constant attendance upon a patient should continue in charge of a case for the purpose of giving evidence as to the cause of death. The hospital authorities, as a matter of principle, maintained that where a man is brought into hospital and his case is diagnosed there, the house surgeon should perform the post-mortem examination (if one should be necessary) and not a practitioner from outside. To this the coroner rejoined that he has no statutory authority to pay fees to two doctors unless it is impossible to ascertain the cause of death from one. He added that inquests were held by arrangement at the hospital and that the hospital received good fees, so that he was himself under no obligation to the hospital or its staff, the arrangement being one of which there was no reason to complain. It seems that the coroner had threatened, on somewhat insufficient ground, that, in the event of any dispute, he would call in the medical officer of the borough to make the post-mortem and give evidence as to the cause of death. This course he justified on the ground that the medical officer was also the police surgeon and that, where there was no doctor concerned, the police would call him in. Against such a step the house surgeon naturally protested; in his view, if a patient dies in the hospital, the hospital authorities should make the post-mortem examination and receive the fee. The coroner, however, reiterated his rule that, when a practitioner has been in attendance on a patient, he shall be called to make the post-mortem and give evidence. In certain cases, of course, the coroner has to certify that the deceased was not attended by a medical officer in the institution. In the particular case which gave rise to the discussion, the deceased had been for some weeks mentally unstable, so that the coroner could with good reason maintain that the patient's own practitioner was the best possible witness of his recent state of health. This local dispute, if such it may be called, will no doubt be amicably settled with some common-sense reconcilation of two different points of view. On the one hand, the coroner must have before him the best possible evidence of the cause of death, for which purpose the testimony of any practitioner who has recently attended the deceased will be particularly valuable; if any statutory restriction as to fees prevents the coroner from obtaining the fullest information, the law should be altered. On the other hand, the reasonable rights of hospitals should be respected, and any observation which can be construed as a possible threat of interference with hospital administration by outside officials should be avoided.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

TWELFTH ANNUAL CONFERENCE.

THIS conference was held in the McLellan Galleries' Glasgow, on July 1st, 2nd, and 3rd, and was attended by over 200 medical men and representatives of the local authorities from all parts of the United Kingdom and Ireland.

SIR ARTHUR STANLEY (chairman of the Council), presided at the opening session. In introducing the Lord Provost (Sir W. W. MONTGOMERY), who welcomed the delegates to the city on behalf of the Municipality, he said that the work of the Association was mainly one of propaganda, of obtaining facts relative to tuberculosis, and giving those out to the general public. A fortnight hence, he stated, an appeal for £100,000 was to be inaugurated at a meeting at the Mansion House, London, over which the Prince of Wales would preside. The £100,000 was to be utilised (1) to educate the masses regarding the causes and prevention of tuberculosis by means of lectures, acting in coöperation with recognised authorities and medical practitioners throughout the country; (2) to render immediate help to applicants, where the machinery of Governmental organisations could be employed; (3) to devise and develop practical schemes for tuberculosis care committees, the pressing need for which had been emphasised by the Ministry of Health.

DR. A. S. MACGREGOR (medical officer of health, Glasgow) introduced a discussion on

Provision for the Care of Non-Pulmonary Tuberculosis.

He dealt with the question as to what extent administration had fallen short of providing the necessary facilities for each area, and what form these facilities should take. Prolonged treatment of non-pulmonary forms of the disease was essential, and that in specially designed and equipped institutions. Until recently the results had been greatly marred by the arrival of the cases at a late stage of the disease. Advanced disease implied destruction of bone, and that frequently led to permanent crippling and deformity. More recently cases had been obtained at an earlier stage and better results had followed. Commenting on the work at Robroyston Hospital, Glasgow, he pointed out that in the treatment of spinal tuberculosis in 1925, 52 per cent. of the cases had been dismissed with the disease arrested, as compared with 34 per cent. in 1922–23. In hip-joint disease the hospital reports showed an increase to 61 per cent. of patients discharged with the disease arrested. In those, partial or complete restoration of function had been the rule. At the present time the corporation of Glasgow have approximately 436 beds available for the treatment of non-pulmonary tuberculosis. That was not sufficient, and the corporation had decided to increase the accommodation at Robroyston. In addition they were building at Mearnskirk a sanatorium for 330 cases of non-pulmonary tuberculosis in childhood. This would increase their accommodation to 750, and would mean a bed for every 1300 of the population. That, he thought, would be sufficient for the necessities of the case on the institutional side. He had been much impressed with the results obtained in the reduction of crippling due to tuberculosis, and looked forward to the day when it would entirely disappear.

DR. JAMES TAYLOR (consulting surgeon, Glasgow Corporation hospitals and sanatoria) dealt with the clinical aspect of non-pulmonary tuberculosis. He stated that for effective work five things were necessary: (1) Prompt recognition of the disease; (2) special open-air hospitals on the lines of Rollier's institution at Leysin, or the institutions at Berck-Plage; (3) the equipment that would enable special treatment to be given, such as plaster, celluloid, or certalmid splinting, light treatment, and X rays, &c.; (4) prolonged treatment, if necessary, over a term of years; (5) efficient after-care, best carried out at special

tuberculosis dispensaries. He emphasised that the improving of housing conditions and the provision of abundant air and sunshine for the population generally, although it would entail a great initial expenditure, would cut down quickly the sum spent yearly on the maintenance of special institutions for treatment of tuberculosis.

Dr. JAMES JOHNSTONE (medical superintendent, Heatherwood Hospital, Ascot) gave figures relating to the cases admitted to this institution since 1922. Only 45 per cent. out of a total of 251 had had the disease for less than one year's duration before applying. Before being admitted these cases had to wait for an average period of six and a half months, mostly receiving some form of treatment in the meantime. The efficacy of that treatment could best be judged by the condition of the patients on admission. This was far from satisfactory. He stressed: (1) The importance of looking on surgical tuberculosis as a local manifestation of a general infection; (2) the importance of an intimate knowledge of the patient and his environment in guiding treatment; (3) the importance of continuity in dealing with cases. For this the National Scheme of the General Committee for Care of Cripples was to be commended. According to this each authority or group of authorities should have their own special hospital in charge of a competent orthopædic surgeon. Combined with this there should be a system of clinics in outlying districts, with specially trained after-care orthopædic nurses. There would thus be a great network of special hospitals throughout the country whose staffs would be in close contact with the areas served. These, through the clinics, would provide an efficient organisation for diagnosis and after-care. He was certain that the need could not be met by large national hospitals.

Dr. J. H. PAUL (Millport) explained in detail the working of a voluntary institution for surgical tuberculosis, dealing with the St. Andrew's Home, Millport, where there are 35 beds approved by the Scottish Board of Health for such cases. He had proved that real open-air treatment was possible in winter as in summer in unheated wards in Scotland. An X ray apparatus and mercury-vapour lamp had been installed, and bone tuberculosis of all types was being dealt with on conservative lines.

Dr. W. B. KNOBEL said that in London a child with surgical tuberculosis was not kept waiting a single day. The County Council held that affected children should be under expert treatment at the earliest possible moment. Unfortunately they could not get early cases except in a small proportion.

Dr. MARSDEN (Bethnal Green, London) said that this was the only form of infectious disease which was not treated as if it were infectious. No genuine results could be anticipated as long as the problem of overcrowding was allowed to remain unsolved. The whole work of the Association, he declared, was a farce unless housing was dealt with.

Sir ROBERT PHILIP (Edinburgh University) reminded the conference that this disease was not confined to the poor; it prevailed all over the world, among high and low. The disease began like a weed, and like a weed in the garden if it were taken in its early stage it could be rooted out.

The afternoon session of the first day of the conference was devoted to the subject of the

Actual Place and Function of the Tuberculosis Dispensary in the Tuberculosis Scheme.

Sir ARTHUR STANLEY again presided.

Sir ROBERT PHILIP said that the principles which had been effectively applied in relation to other infective conditions, with appropriate modifications, were applicable to tuberculosis. The tuberculosis dispensary had demonstrated the extensive ramifications of tuberculosis and collected proof of the universality of tuberculosis throughout the community. It had afforded incontrovertible evidence of the spread of infection through a household from a primary source. By getting at the cases in the earliest stage it had rendered possible the practice of anticipatory treatment, which has in view the raising of the resistance of the individual, antigenic or otherwise. Observation at the dispensary of the varying manifestations of the tuberculosis process throughout a long series of years had shown that a patient in the so-called third stage with cavity formation (regarded by many as the terminal picture) could go on comparatively fit and well for 30 years or longer. By continued observation on ambulant patients it had proved how essential was the maintenance of such supervision and how valueless the result of short periods of residential treatment. By domiciliary visitation it had succeeded in reducing the effects of unhealthy environment and re-creating insanitary houses after the image of the sanatorium. The dispensary's educational value could hardly be over-estimated. Unfortunately the ideals of the dispensary and its great possibilities were not being realised everywhere. It was common to find the tuberculosis dispensary concerned solely or chiefly with cases of pulmonary tuberculosis, although those constituted for the most part a later manifestation of the disease. The idea of using the pronounced case of infection as a clue to the earlier was overlooked or ignored.

Dr. G. LISSANT COX (central tuberculosis officer, Lancashire) discussed two important functions of the dispensary—diagnosis and prevention. In regard to diagnosis, in the county of Lancashire they had five large dispensary areas, with an average population of 350,000. Each area was in charge of a whole-time consultant. To assist those consultants there were eight assistant tuberculosis officers and 30 health visitors. The consultants in addition acted as visiting medical superintendents of pulmonary hospitals, and were paid from £950 to £1150 per annum. Each consultant had his own laboratory and trained laboratory workers and his own X ray apparatus. Dr. Cox attached great importance to having, for diagnosis, a real specialist with his own laboratory, X ray plant, and observation beds in a hospital. As to prevention, in the past too much emphasis had been laid on treatment rather than prevention. He could even remember being warned that if he did not make better provision for treatment—that was handing out bottles of cod-liver oil—they might not earn the Government grant for their scheme. To illustrate the preventive function of the work he said that the cordial relations existing between dispensary staff and practitioners resulted in a great increase in the notifications of cases of tuberculosis. The non-notified cases fell from 303 in 1918 to 66 in 1925. When infective pulmonary cases lived at home the dispensary staff made efforts to secure for the patient a separate bed. Necessitous cases could obtain these on loan from the county council. As a result of their efforts the deaths from tuberculosis in Lancashire had decreased from 107 per 100,000 in 1918 to 67 in 1925.

Dr. KNOBEL said the question was whether they were satisfied that under the present dispensary system they were detecting the greatest possible number of cases in the early stage of the disease. Comprehensive schemes had been built up, yet after years of work and propaganda 75 per cent. of the cases were in a more or less advanced or irremediable stage when they first came under the scheme. He regarded that as a serious criticism of the dispensary scheme, so serious that it became a question as to whether dispensaries were or were not organised on the right lines. If dispensaries failed to get hold of more than a small proportion of remediable or curable cases, then the money spent on sanatoriums was largely wasted. He suggested that the Association might consider the advisability of pressing the Government to make provision in the new Factory Bill before them for closer coöperation between factory surgeons and the tuberculosis dispensary, in order to enable them to get at the young adult type of case earlier. He also suggested the desirability of propaganda distinguishing between infective and non-infective cases.

Dr. BRAND (Clerkenwell) stated that the dispensary was an indispensable instrument in dealing with tuberculosis and should be properly organised as a centre of diagnosis. Practitioners were the potential backbone of the dispensary; with their coöperation the question of the diagnosis of contact cases was relatively simple. He urged county councils, by providing the necessary equipment and giving sufficient study leave, to make their tuberculosis dispensaries more efficient instruments than they had hitherto proved.

Dr. J. CROCKET (Bridge of Weir) called attention to the fact that the greatest fall in the death-rate from tuberculosis had taken place before any tuberculosis scheme was conceived. In Scotland the rate per 100,000 had fallen no less than 64 during the 12 years previous to the discovery of the tubercle bacillus in 1881. It had not fallen nearly so much in any 12-year period since. Tuberculosis was a secondary product, and best results would follow from dealing with the contributory factors in its production. Tuberculosis was due to dirt, damp, drink, and bad houses. The carrying out of Public Health Acts and of factory legislation had produced the great fall in the death-rate in the past. More thorough enforcing of the provision of those Acts would do much to cut it down still further in the future. The dispensary was an attempt to accomplish the impossible. Approximately 470,000 died of tuberculosis each year. That implied 470,000 cases of active disease and a further 470,000 potential cases. 420 tuberculosis officers could not effectively supervise home conditions, search out incipient contacts, sort out cases for treatment, give domiciliary treatment, and attend to after-care, in addition to filling up innumerable forms and compiling statistics. Dr. Crocket thought that the practitioner should be trained to do this work, being provided with such consultation service as was necessary. He protested against the present tendency to side-track the medical officer of health and have him do the legitimate work of the family physician. The main work of the medical officer of health should be to deal radically with the great causative factors in the production of the disease.

Dr. MCCALLUM LANG (Lanark) spoke about the difficulty in getting adolescents to come to the dispensary for diagnosis; of those who did present themselves for diagnosis less than half were found to be tuberculous. The dispensary thus prevented over-notification of tuberculosis. He thought the part played by the dispensary in the examination of contacts was over-rated.

On the second day of the conference Sir ROBERT PHILIP occupied the chair. Prof. CARL BROWNING read a paper on

Experimental Studies in Tuberculosis in Reference to the Origin of Pulmonary Tuberculosis.

He proposed to deal only with causation, since this formed the basis of measures aiming at prevention. Practically everyone in a city was liable to breathe air containing tubercle bacilli. Only a minority of those who at some time had harboured tubercle bacilli developed the disease. The objection to the view that adult tuberculosis is a development of infantile disease was that in childhood the causative organism is frequently the bovine organism, and in adult years it is practically always the human organism. The tuberculin test showed the disease to be endemic in European countries. In rural districts in countries such as India this was not so. There natives on exposure rapidly acquired and succumbed to a galloping form of the disease. Endemic tuberculosis and a mild bovine infection in childhood exercised a favourable influence, conferring partial protection. Tuberculosis of the lungs did not necessarily indicate the route of infection, but was evidence of a special predilection of the lungs for the tubercle bacilli. Among mice inoculated intraperitoneally with the human tubercle bacillus 6 per cent. showed massive broncho-pneumonic patches. Of those inoculated with the bovine strain 9 per cent. showed a similar lesion. When infected through the food 11 out of 20 animals showed pulmonary disease, and in 9 the lungs were the only organs affected. Experimental work showed that when infection is passed directly from animal to animal the virulence varies irregularly. As the result of a sojourn in one individual the organism might become highly virulent for others, although it might not produce severe disease in that individual. In the future it might become necessary to utilise methods of prophylactic immunisation to protect the population. As to a practical means of doing this, little was as yet definitely known, though Calmette and his co-workers claimed a considerable degree of success.

Dr. J. A. WILSON (Glasgow) read a paper on the

Age Factor in the Incidence of Tuberculosis.

The work for this paper was done on a population 79 per cent. of whom resided in houses of one or two apartments. The patients numbered 3817—1937 males and 1880 females. Statistics for tuberculosis based on the age at death were misleading. They gave an erroneous impression of the age distribution. The expectation of life from the date of sickening was calculated from tables compiled. For many years a decline in the death-rate has been recorded. Coincident with this there had been a change in the age distribution. This might be due to a higher standard of diagnosis. Under 5 years of age the expectation was low. The characteristic disease here was broncho-pneumonia or acute miliary tuberculosis. These were rapidly fatal. From 6–20 years of age the expectation of life was materially increased. The expectation figure one year after the onset was lower than the corresponding figure in the younger group. From 21–40 the expectation was better in both sexes. Fewer acute cases died within six months. The tendency to chronicity was more marked in the males. Over 41 the expectation was diminished. The figure in males was lower than that for the 6–20 group. At all ages the expectation of life was less for the female than the male. In regard to the expectation of life relative to the size of the house it was found unexpectedly that the expectation was actually greater in a one-apartment house. The incidence of the disease, on the other hand, bore a definite relationship to the size of the house. An increase in the size of the house was associated with a decrease in the average annual incidence in adults.

The figures showed three facts: (1) A striking decline in the incidence of tuberculosis at the higher ages; (2) in young adults acute disease shows practically no decline; (3) there is a definite relationship between the size of the house and incidence of tuberculosis.

Dr. A. SMITH (Robroyston Hospital) read a paper on the

Treatment of Tuberculosis by Sunlight.

Artificial sunlight treatment was begun at Robroyston in January, 1925. His experience was chiefly with the carbon arc lamp. In treatment he gave a general light bath, beginning with an exposure of 20 minutes, increasing this every fourth day five minutes. Pigmentation followed—brunettes deeply and quickly, blondes with difficulty, those who freckle with difficulty, and cachectic cases scarcely at all. The carbon arc produced a brown pigment just like sunlight, the tungsten arc a reddish-brown coloration, the quartz mercury vapour a yellowish-grey. His experience showed that a good result followed in cases which became well tanned. Occasionally good results accrued even without tanning. Several striking features were noted during treatment, e.g.: (1) a rapid improvement in general health; (2) a steady gain in weight; (3) lassitude gave place to a feeling of well-being and exhilaration. An overdose, on the other hand, could depress. Excellent results were obtained in almost all cases of tuberculosis of the smaller joints and of sinuses. The hope of return of mobility and function of the joint in those cases was increased. It must be remembered that fixation could not be dispensed with during light treatment. Many

notes of warning had been sounded regarding the effects of ultra-violet light in reactivating pulmonary lesions. Twenty pulmonary cases had been treated by him and no catastrophes had resulted. He did not see why in early pulmonary disease great benefit should not follow on light treatment.

Mr. W. BROWNHILL SMITH (Glasgow) read a paper dealing with Glasgow's solution of the smoke problem. He said that it would be difficult to prove that the number of cases of illness were due to the absence or even diminution of sunlight. All, however, would admit that many cases of tuberculosis and rickets were so caused. It was the duty of all medical men to preach against the evils of a smoke-laden atmosphere.

An interesting demonstration of radiograms of the chest was given by Dr. FERGUS HENDERSON. Visits were paid to various housing schemes and sanatoriums in Glasgow, as well as to Hairmyres Training Colony at East Kilbride and the Consumption Sanatoria of Scotland, Bridge of Weir.

CONGRESS OF THE ROYAL SANITARY INSTITUTE.

THE Jubilee Congress of the Royal Sanitary Institute was held in London from July 5th to 10th. The members of the Congress attended church service at Westminster Abbey on Sunday, July 4th, when the Right Rev. the Lord Bishop of Southwark presided.

At the official Congress luncheon, held on July 5th at the Hotel Victoria, Sir ARCHIBALD GARROD referred to the value of making the acquaintance of colleagues at conferences and the consequent increased interest taken in their work. The DUKE of NORTHUMBERLAND pointed out that the Congress was even more representative of this country and the Empire than usual, and expressed the belief that much benefit would result from the focusing of public attention on the matters brought forward for discussion.

The inaugural address of Mr. Neville Chamberlain, President of the Congress, at the Guildhall of the City of London, was read by Dr. I. G. GIBBON, Assistant Secretary to the Ministry of Health.

The Minister of Health in his address compared the present state of public health with that of 50 years ago; in 1876 the general mortality rate per 1000 living was 20·9; in 1925 10·7. The infantile mortality rate in 1876 was 14·6; in 1925 75. Typhus and cholera had been practically entirely overcome; the extent of enteric fever, malaria, scarlet fever, diphtheria, and tuberculosis had been very greatly reduced. But because conditions were so much better there was danger that precautions such as vaccination may be relaxed. The increase of years of working life had been a great economic gain and the lengthened life of the bread-winner had made family life more secure. The abolition of disgusting smells and sights had added to the amenities of life; this in its turn reacted on health. After making deductions for the advance of medical treatment and the marked rise in the standard of living, a very large part of the credit was due to the measures introduced as the result of the efforts of public health reformers. There should be in the coming years great advances in dealing with those suffering from or liable to mental diseases. Institutional treatment should be provided for the mentally defective. Old age and widow's pensions would materially contribute to health by removing serious sources of anxiety. The foundation of health as well as content lay in the economic prosperity and security of the workers of a country; the greatest health victory that could be won would be the satisfactory settlement of the present industrial dispute. The founders of the Royal Sanitary Institute had helped public health by making a steady effort to raise the standard of qualification of local health officials. As to the future, proper methods of sewage disposal and, in rural districts, better water-supplies were required. The Smoke Abatement Bill would secure substantial improvements without any harm to industry. There was room for progress in the supervision of milk and other food-supplies, but there was need for purity and plenty, not purity and scarcity. Much progress had been made with housing; since 1919, over 670,000 houses had been built, over 413,000 of these with assistance from the Exchequer. A further 87,000 are in course of erection and 137,000 more had been authorised. Progress was being made with the clearance of slums. Rural housing would be the subject of some further measures. Unfortunately the money available for housing was not unlimited and the pool of available skilled labour not abundant. As regards the health of individuals, one of the chief needs was to obtain more coördination of the existing services; the excellent work done by Poor-law authorities should be brought into closer relation with that of other bodies; there would still be ample need of the services of boards of guardians. The Minister hoped that while retaining their voluntary character the hospitals would be able to play their part in this work.

Everyman in Preventive Medicine.

On the morning of July 6th the work of the sections began. Opening the discussion on Everyman in Preventive Medicine, Lord RIDDELL said that most people fail to recognise that the general public were not interested in technical subjects, even when of vital importance. In attempting to popularise hygienic measures, too little attention was paid to the art of knowing how to reach the man in the street.

Dr. A. G. R. FOULERTON contributed a paper which showed the effect of bacteriological work in preventing the classical scourges of armies in the field—typhoid and typhus fevers and cholera.

Dr. A. F. TREDGOLD thought that in preventive medicine the factors of inheritance received scant attention; they had been the subject of no administrative action. There existed in the community a large number of persons in whom innate tendencies to physical defect, ill-health, and disease were so marked that they must inevitably give rise to similar offspring. The discussion of specific eugenic proposals could be profitably undertaken by a small competent body.

Dr. H. P. NEWSHOLME held that a healthy mind was necessary to secure a healthy body. The habit of unbridled imagination which encouraged a morbid growth of the emotions should be checked. The imagination must be controlled by reason, if a balanced healthy outlook was to be maintained.

Modern Developments in Housing.

Discussing housing, Mr. F. MONTAGUE, M.P., pointed out that the wage of seven-eighths of the population is not more than £150 per annum. Normal housing development was extensive rather than intensive and involved the problem of transport; the construction of the house was closely related to town-planning, its purpose being to provide a home which should be the woman's workshop, arranged to suit her convenience.

Mr. E. C. P. MONSON, F.R.I.B.A., emphatically declared in favour of brick, as opposed to concrete or steel for building houses. The brick was the most adaptable building unit, and was cheap and simple. Concrete might be suitable for factories which present large wall spaces.

Mr. R. WARREN, F.R.I.B.A. (Ministry of Health), said that the Building Research Board of the Department of Scientific and Industrial Research had proved most valuable. He gave a short account of the new methods of house construction which had been tried.

Sewage Treatment.

Mr. H. T. CALVERT, D.Sc. (Ministry of Health) read a paper setting out some of the principles of the activated sludge process of sewage treatment. Activated sludge was produced from sewage by a process of aeration, the exact function of the oxygen of the air being yet undetermined. When mixed with fresh

sewage and aerated, it coagulated certain of the solids, the colloids in suspension, and the organic matters in true solution, leaving a purified effluent. In this process the activated sludge lost its virtue and had to be aerated once more. Much was expected of the new bio-flocculation process at Birmingham, in which the activated sludge was allowed to do its work only in part; the partially purified effluent was then passed through percolating filters at twice or thrice its ordinary rate. By this modification an effluent of any required degree of partial purification could be obtained, and a much wider application of the activated sludge process rendered possible.

At the Conference of Sanitary Inspector, Mr. W. G. COOPER (Bournemouth) gave a retrospect of the work of sanitary inspectors; a plea for consolidation of the Public Health Acts was made by Mr. T. TOPPING (Rochester); Mr. F. G. MCHUGH (Leicester) advocated the abolition of private slaughter-houses, and Mr. R. KEELEY (Lancashire C.C.) read a paper on the betterment of existing housing conditions.

(To be concluded.)

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

The Medical, Dental and Pharmacy Bill.

IT appears that there is little hope that either the Public Health Act Amendment Bill or the Medical, Dental and Pharmacy Bill will go further this session. At the second reading of the last-named Bill in the Union House of Assembly in April the Minister of the Interior (Dr. Malon) commented on the long and chequered career this Bill had had in the Union Parliament. He pointed out that the measure had been scrutinised. It had actually been dealt with by three select committees and referred to the various medical unions and faculties of the universities. The Bill represented, therefore, the agreed opinion of all the pofessions with which it proposed to deal. The measure as it stood repealed no fewer than 16 laws. An Emergency Act had, however, been passed in 1917 removing certain inter-provincial difficulties in regard to practice between the various provinces, particularly so with regard to chemists and druggists. The Bill made provision in respect of the sale of poisons and drugs. It had been asserted that South Africa was the easiest country in which to purchase poisons and drugs.

Ninety-five per cent. of the Bill might be regarded, he said, as non-contentious. An important part of the Bill was the provision for unification of control, so that, instead of having multifarious bodies, there would be in future one medical council for South Africa and one pharmacy board. Proper representation of all the provinces was provided for. Registration of practitioners under the law was provided for, so that the public would know who was and who was not registered. All those now practising in the various provinces would automatically be transferred to the new Register. All those who could be registered under the old laws could be registered under the new law. No change was made in regard to the registration of medical practitioners from overseas. Certain safeguards were laid down, for instance, that the diplomas for medical practitioners in other countries must be of the same standard as the South African diplomas.

Following the Minister's speech a somewhat heated discussion arose on the clauses relating to drugless healing. The Bill provides that unqualified exponents of various cults shall not practise for gain except under medical supervision. The Minister of Labour, Mr. Boydell, spoke strongly against the insertion of this clause. It is hardly surprising, considering the difference of opinion on certain sections of the Bill in the Cabinet itself, that the Bill is not to be put through this session.

Researches on Plague in South Africa.

At the annual meeting of the Rand Chamber of Mines held not long ago in Johannesburg, the President, Mr. P. M. Anderson, called attention to the experimental investigations, bacteriological and entomological, in connexion with plague as it affects South Africa which had been in progress in the South African Institute for Medical Research. The researches were designed to throw light upon such questions as the comparative susceptibility to plague of various veld animals, the transmission of disease by feeding on infected animals that had died, the persistence of infection in deserted burrows, and many bacteriological problems. The entomological work consisted mainly in the collection and identification of the parasites of field rodents with subsequent breeding, longevity, feeding, and transmission experiments. The last-named experiments were to discover the capability of certain fleas to convey plague from rodent to rodent.

During the prosecution of these researches by Dr. Harvey Pirie and Dr. A. Ingram it was observed that a large mortality occurred among gerbilles (among the commonest carriers of plague on the veld), which was not accounted for by plague infection, and it was eventually found to be due to a disease produced by a hitherto undiscovered bacillus. Experiments are now being carried out with this organism, of which details will be published at an early date. Meanwhile Dr. Pirie and Dr. Ingram are continuing their work in close coöperation with the Union Department of Public Health.

The Retirement of Dr. W. Watkins-Pitchford.

The impending retirement on the grounds of ill-health of Dr. W. Watkins-Pitchford from the directorship of the South African Institute for Medical Research will be universally regretted in this country. The connexion of Dr. Watkins-Pitchford with South Africa dates from the year 1897, when the Natal Government, having decided to erect a bacteriological laboratory for the study of stock diseases, commissioned him to visit and report upon the principal laboratories of Great Britain and the continent. In 1899, upon the outbreak of the Boer war, he was attached to No. 7 General Hospital at Estcourt in Natal, and was entrusted with its bacteriological and pathological services. In 1902 he was appointed assistant bacteriologist, and in 1907 pathologist and analyst, to the Natal Government. Dr. Watkins-Pitchford was the first to introduce into Natal serological tests for diseases, the bacteriological examination of water and foodstuffs, and the preparation of bacterial vaccines. In 1911, following upon the union of the South African States, he was transferred to Johannesburg to undertake the duties of Government bacteriologist and pathologist for the Province of the Transvaal, and was also appointed to be analyst to the municipality of Johannesburg and honorary pathologist to the General Hospital. In the same year the Witwatersrand Native Labour Association initiated a scheme for establishing an institution to be devoted to the purpose of medical research, and a joint committee representing the Government and the Association was formed to carry out the project. Dr. Watkins-Pitchford was appointed first director of this institute and was associated with the architects in planning and designing the beautiful building which is now the South African Institute for Medical Research. In 1916 Dr. Watkins-Pitchford was made chairman of the Miners' Phthisis Medical Bureau, established to administer the medical sections of the Miners' Phthisis Act. The high standing of the publications issued from the South African Institute for Medical Research is largely due to the careful editorial supervision of its director, who has spared no pains to make them into documented and clear accounts of the work that is proceeding. It is not yet known who will succeed him in this and the many other posts which he has fulfilled so successfully.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Recent Small-pox Epidemic.

THE director of the vaccination service of the Académie de Médecine, Dr. Lucien Camus, has been giving some particulars of the recent outbreak of small-pox. Its duration and importance were greater in the south than in Paris; in the Haute-Garonne 160 cases were notified with 45 deaths; in the Hérault 52 cases with 19 deaths; and in the department of the Seine 24 cases with 5 deaths, of which 14 cases and 2 deaths were in Paris. The spread and course of the epidemic depended on how effectively the patients could be isolated, on the disinfection of contaminated things and places, and on the vaccination of individuals and groups of contacts. In all the areas affected the first victims, who had spread the disease, were foreigners, and although arrangements for preventing transport of infected merchandise from abroad are nowadays satisfactory, there ought to be a rule that foreigners, with the exception of tourists and winter visitors, must be vaccinated before setting sail for France. It is stated that in this epidemic, as in previous ones, members of hospital personnel often contracted and disseminated infection.

An Antidote to HCN.

Some interesting experiments with hydrocyanic acid have recently been made by Dr. Violle, professor of hygiene in the Marseilles School of Medicine. A concentration of 2 g. of HCN per cubic metre of air will kill an animal in a few minutes, but Dr. Violle has discovered that animals which have previously had a dose of glucose (by injection or by mouth) can breathe this toxic atmosphere for more than an hour without ill-effects. The glucose apparently enables them to neutralise hydrocyanic acid, and the tissues are able to deal with relatively enormous quantities. These remarkable findings, if confirmed, should have a practical application, since glucose might be used as a prophylactic by those whose work brings them into contact with the gas itself—e.g., in cleaning ships of rats—and those who have to handle cyanide compounds.

Centenary of Laënnec.

Next December Paris will commemorate the hundredth anniversary of the death of Laënnec. A large number of foreign savants have promised to support the committee which is arranging the centenary celebrations, and it is felt that a tribute paid to the memory of Laënnec can hardly leave any doctor indifferent. The treasurer of the committee is M. Masson, 120, Boulevard Saint Germain, Paris, VI[e]. The full programme, which will soon be published, includes a celebration at Ploaré, Finistère, Brittany, on August 12th. Laënnec died at the manor of Kerlouarnec, Ploaré, on August 13th, 1826.

Medical Fees.

Free medical service in the Paris suburbs has recently been included under the administration of the Prefect of the Seine. The medical organisations (syndicats) are protesting against the unduly small fees allowed by the State for the treatment and care of indigent patients. The only fees demanded by the physicians are Fr.10 for visiting a house and Fr.8 for an interview at the doctor's consulting-room. These sums are certainly not remunerative, especially in view of the rising cost of living. The physicians are disposed to endure present bad conditions as far as possible, and will not cease to aid the poor; but they insist on fairer treatment than that now accorded them.

Modifying the Action of Insulin.

Bertrand and Mâcheboeuf have just presented to the Académie des Sciences the results of experiments, made in dogs and rabbits, tending to show that certain substances are capable of modifying and reinforcing the action of insulin. The addition of small quantities of nickel or cobalt seems clearly to enhance the therapeutic effects of insulin, and these results may be important in clinical practice.

The Antiluetic Campaign.

A conference was held at Paris on June 18th, when Prof. Bayet, of Brussels, was the principal speaker. He states that syphilis, after material diminution, has become almost as prevalent in France as it was before the war. The increase is ascribed to wholesale immigration, to neglect of the arsenical preparations in favour of bismuth and new compounds, and to the absence of a concerted movement against syphilis. In Belgium, the urging of vigorous treatment, provision of free medical care, and extremely active propaganda, have together reduced the frequency of syphilis by four-fifths, as compared with 1920–21. Prof. Bayet considers that the International Union against the Venereal Peril, formed at Paris three years ago, is the most effective organisation for combating venereal disease, especially because more than 40 nations are represented in it.

Illegal Practice of Medicine by Foreigners.

According to information supplied by the French Ministry of Justice, some 20 Russian physicians have been prosecuted for practising medicine illegally in Paris. Certain privileges have been extended to Russian physicians who served with the Allies during the war, but no alterations have been made or are contemplated in the law of 1892 regulating the practice of medicine in France.

The last French congress on balneology and hydrology adopted a resolution looking to the creation of a new chair in therapeutic hydrology at the Faculté de Médecine of Paris. All the organisations interested in climatology, hydrology, and kindred subjects have given support to the movement, and a Bill is being prepared with clauses providing for due allotment of the Government funds toward maintenance of a new department and chair.

A conference on medicine, surgery, and public health, called Journées Médicales de Paris, will be held at the Grand Palais, Paris, from July 15th to 19th inclusive. The programme is very complete and many eminent men will take part. Further information may be had from the Secretary-General, Dr. Dujarric de la Rivière, 18, rue de Verneuil, Paris, VII[e].

The subjects arranged for special discussion at the neurological meeting of 1927 are (1) normal and pathological sleep, and (2) methods of exploring the vestibular apparatus. The rapporteurs for the first subject are Lhermitte and Tournay; for the second, Magnus (of Utrecht) and Hautant.

Dr. E. Sorrel, surgeon in chief of the Hôpital Maritime de Berck Plage, will hold a course on Surgical Tuberculosis at the hospital from July 19th to 31st. Particulars may be had from Dr. Delahaye, Hôpital Maritime de Berck Plage, Pas de Calais.

SKILLED TREATMENT FOR PATIENTS OF MODERATE MEANS.—The annual report has just been issued of St. Chad's Hospital, Edgbaston, a self-supporting institution which treats patients who pay an inclusive fee not exceeding 12 guineas a week, and patients who pay the medical attendant independently of the nursing charge. The report states that 88 per cent. of the inmates pay inclusive fees, which are less than half the usual cost of the treatment they receive. Twelve years' practical experience has taught the committee that the problem to be found is not to be solved by the provision of cheap nursing-home accommodation, and they feel that the hospital could be made of real value to many who cannot at present avail themselves of its help if some simple system of insurance could be provided. They think that a premium of 20*s.* to 25*s.* per individual would be adequate, and they are prepared to accept and treat any patients insured by an outside body in approved lives at a fixed scale, irrespective of the kind of treatment required.

Correspondence.

"Audi alteram partem."

SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.

To the Editor of THE LANCET.

SIR,—The line of treatment to be adopted with perforated gastric and duodenal ulcers has been a frequent subject of discussion, and the conclusion has generally been arrived at that for a complete cure something further than simple suture will be required. Some surgeons have held views similar to those of Mr. Hughes and Mr. Ley, and have advised against the use of gastro-enterostomy. In the present discussion this line of treatment has been supported to the exclusion of all others, and the statement has been so dogmatically made that other methods are incorrect as to lead to the belief that no other views are held. This is far from being the case.

Whether gastro-enterostomy be performed at the time of the perforation will depend upon the patient's condition and the surgeons ability to carry out the anastomosis rapidly and with a minimum amount of shock, and there will often be considerable justification for the belief that it is better left. That simple suture is sufficient to bring about a permanent cure is, however, a view with which many will disagree. If it is a fact, then the whole surgery of gastric and duodenal ulceration must be incorrect, for should it alone be necessary to convert a perforated into an unperforated ulcer then chronic ulcers as a class should not require any surgical treatment. My own experience, and I think that of many other London surgeons, has emphatically shown that if such perforations are only closed, and the cases are carefully followed up afterwards, a very high percentage of them will show both clinically and on X ray investigation that the ulcer has persisted. I have had to operate upon 19 cases where a simple closure has been performed elsewhere by surgeons holding similar views to Mr. Hughes and Mr. Ley, and the patients have returned some months or years later with definite symptoms of chronic ulceration. In two cases they have sought treatment for a second perforation.

What percentage this number may represent it is impossible to say, as they have come from all parts of the country, but there is a smaller, and, from this aspect a more interesting group of cases which have been operated upon by my first assistant for perforation by simple closure; these have all been sent to my follow-up department to be watched, and there has not been a single case which has remained free from symptoms or has later failed to give X ray evidence of a chronic ulcer. The one important fact is that cases so treated should be watched over a considerable period, and I cannot but help feel suspicious of Mr. Hughes's statement that he has been kept informed about the majority of these cases. Even if the minority had persisted, they might form a considerable percentage of the total. Personally, I find that in a large number of early cases a gastro-enterostomy can be perfectly safely performed at the first stage, but should the patient be seriously ill simple closure should alone be performed, and the gastro-enterostomy left to a later date.

My one reason for entering this controversy is the fear that if the statements of Mr. Ley and Mr. Hughes gain general acceptance the after-progress of these patients will not be adequately watched, and I am confident from my own experience that a large number of them will not only be subjected to the discomforts and disabilities of recurrent ulceration, but may even have their lives endangered from the onset of later hæmorrhage or perforation.

I am, Sir, yours faithfully,

A. J. WALTON.

Devonshire-street, W., July 3rd, 1926.

THE LEPROSY CAMPAIGN.

To the Editor of THE LANCET.

SIR,—Having just completed a tour of about 40,000 miles, on behalf of the Mission to Lepers, to investigate the present situation in the light of the new treatment, and having spent some months in the largest leper home in India, I hope that a few notes on the present situation as regards leprosy treatment may be of general interest.

I have been privileged to see a great number of homes and a variety of work in India, Burma, Siam, Borneo, and the Philippines, and have been able to view at close hand the results of a number of treatments. Much has been written during the last few years on the "specific treatment" of leprosy, but I would suggest that work as important with regard to the curing of leprosy has been done on the non-specific treatment of this disease. Leprosy is par excellence a disease of the unhealthy, and unless predisposing causes such as syphilis, hookworm, constipation, and malaria are dealt with there is very much less chance of arresting the disease.[1] In addition, it is important that the leper should have abundant exercise, good food, and healthy surroundings, for unless such factors are taken into account the attempt at treatment is like trying to drive a car up a hill with the brakes on! It is now an established fact that only about 3 per cent. of lepers actually die of leprosy.

Hansen said as far back as 1895: "Most maculo-anæsthetic lepers in time become purely anæsthetic, they no longer suffer from leprosy but only from its results"[2]; this was the first and most important point that Muir re-emphasised when he called leprosy a self-healing disease.[3] It cannot be too strongly stated that many lepers cannot be helped much by the new treatment, because the anæsthesia and other signs of nerve lesions are often the result of nerve destruction, the leprosy having died out.

The treatment that is meeting with most success in India is that of hydnocarpus oil or its ester mixed with 4 per cent. creosote; the camphor mixture has been abandoned, and it has been suggested by some workers that camphor is harmful.[4] The ester is used in the following proportions: hydnocarpus ester, 50 parts; olive oil (free from fatty acids), 50 parts; double distilled creosote, 4 parts. The injections are given twice a week by the method of subcutaneous infiltration as advocated by the School of Tropical Medicine of Calcutta.[5] The dose is ½ c.cm. to commence with, gradually going up to 10 or 15 c.cm. by increments of ½ c.cm. The object is to produce well-controlled reactions. It is to be remembered that any drug which will produce reactions in leprosy tends in certain stages to produce beneficial results, and in trying new remedies this factor must not be lost sight of. For the practitioner working in the tropics, it is recommended that he should use either pure hydnocarpus oil and creosote, to the extent of 4 per cent. of creosote, or the above ester mixture. Before commencing treatment one should ask oneself the question, Is there any cause which will prevent the drug to be used from exerting its maximum effect? If there is such a cause, no matter how trivial it appears to be, it should be cleared up.

Finally, with regard to prognosis, it should be borne in mind that it is not alone the question of recovery that is uppermost in the patient's mind; it is also the question of ultimate deformity. So prognoses should be based on whether the disease will be arrested with or without deformity. There is little credit in arresting leprosy if the patient ends up hopelessly

[1] Muir: Predisposing Causes of Leprosy, THE LANCET, 1925, i., 171.
[2] Hansen and Looft: Leprosy in its Clinical and Pathological Aspects. Translated by Norman Walker. Pp. 67.
[3] Muir: Leprosy a Self-healing Disease, THE LANCET, 1924, i., 277.
[4] Samson and Limkako: Reports on Creosote as an Adjuvant in Leprosy Treatment. Philippine Journal of Science, vol. xxiii., No. 5, November, 1923.
[5] Muir and Rogers: Leprosy, p. 265.

mutilated. If the above facts are constantly kept in mind, then I feel sure that in treating leprosy satisfactory results will accrue in the really early cases.—I am, Sir, yours faithfully,

ROBERT G. COCHRANE,
Medical Secretary for the Mission to Lepers.
33, Henrietta-street, Covent Garden, W.C.

OLEOTHORAX.

To the Editor of THE LANCET.

SIR,—I was much interested to see from your article on the work of Kuss and Bernou on oleothorax [1] that "this new method is attracting some interest abroad." May I point out that the method is not entirely new and that it has been practised in this country for many years? In 1913 Gibbs Lloyd and Myer Coplans in Leeds made experiments to ascertain the rate of absorption of paraffin by the peritoneum in animals. Before this time research had been done by an Englishman, whose name I unfortunately forget, on the absorption of paraffin by the pleura in animals. In 1913, at the International Congress of Medicine in London,[2] I brought forward the subject of paraffin injections into the pleura in the treatment of pulmonary tuberculosis and gave details of two cases in which I had employed this method. Saugman, who was present, encouraged the idea of this form of treatment. Since then I have given injections of paraffin into the pleural cavity on more than 200 occasions in cases of pulmonary tuberculosis and also of bronchiectasis.

I had two objects in mind: first, to prevent adhesions between the two layers of pleura; and secondly, to compress the lung in a manner more permanent than that which is possible by means of the introduction of gas. At that time I advised that an artificial pneumothorax should always be induced before the paraffin injection, and I am still of the same opinion. If paraffin is injected when the pleural layers are tightly bound together by adhesions, force is required to separate them and there is then danger of shock and of embolism. Whereas, if a preliminary artificial pneumothorax is performed, there is no such danger and the pressure at which the paraffin is introduced is not of major importance. I have found that when the pleura is free and the lung has been compressed by a sufficient quantity of gas, adhesions are prevented by the subsequent injection of paraffin, but that when they are thick and widespread, and consequently very little gas has been introduced, these adhesions are only increased by the paraffin and there is difficulty in getting in at the next refill. One may, of course, wish to increase adhesions, but I like to reserve the paraffin treatment for those cases in which gas has already been introduced and where for one reason or another it is desirable to keep the lung compressed without frequent gas refills. I look upon paraffin as an alternative to the more serious procedure of thoracoplasty. As to the amounts used, I give 2 drachms for an initial dose and increase the dose gradually to 6 drachms. In one case of bilateral disease in a patient who was febrile and bedridden, and for whom there was no expectation of more than a few weeks of life, I introduced in all 12 ounces of paraffin together with air on the left side, where the disease was most active. There was rapid and marked improvement, and for two years the patient lived in comparative comfort. She then went altogether to pieces and at the post-mortem the left lung was found to be a fibrotic mass collected round the root. There were several ounces of paraffin, mixed with clear serous fluid, in the pleural cavity. Only about one-third of the right lung was free from signs of gross disease.

The question of antiseptics has been raised. I find that I was using them (essential oils together with paraffin) in 1914. I was unable to see any therapeutic advantage in them. I did not find that patients for whom they were used benefited more than patients who had paraffin only. In one patient an acute and dangerous pleurisy followed, the disease in the lung spreading rapidly after the use of the antiseptic. This may have been merely a coincidence, but I felt the omen to be too unfavourable to allow me to continue the treatment.

I am, Sir, yours faithfully,

H. DE CARLE WOODCOCK.
Park-square, Leeds, June 30th, 1926.

[1] THE LANCET, June 12th, p. 1157.
[2] Transactions Seventeenth International Congress of Medicine, Medicine Section, vi., Part II., London, 1913.

ENDEMIC GOITRE IN NEW ZEALAND.

To the Editor of THE LANCET.

SIR,—In an annotation on the above subject which appeared in THE LANCET of May 22nd (p. 988) no reference is made to what is, perhaps, one of the most remarkable facts in the valuable paper with which the annotation deals.[1] The fact is this, that although 96 normal children in Christchurch received "sodium iodide in graduated doses once a week for ten weeks in each of the three terms of the year" 38 of them, or 39 per cent. developed thyroid enlargement during that period.

In this connexion a recent statement by McClendon [2] is of interest: "Thirteen towns (of Utah) with high iodine-content of the water-supply showed 39 per cent. of goitre in the schools." It is true that the percentage of goitre in school-children was higher (52 per cent.) in 13 other towns of Utah where the iodine-content of the water-supply was low; as it was also higher (55 per cent.) in previously normal school-children of Christchurch who received no prophylactic treatment with iodine. The fact remains, however, that 39 per cent. of children both in Christchurch and in Utah develop goitre despite the adequate ingestion of iodine. I am, Sir, yours faithfully,

R. MCCARRISON.
Pasteur Institute, Coonoor, S. India, June 16th, 1926.

[1] Hercus, Benson, and Carter: Jour. Hyg., December, 1925.
[2] Proc. Soc. Expt. Biol and Med., 1926, xxiii., (6), 494-496.

THYROID ENLARGEMENT AND THE "LACK OF IODINE" THEORY.

To the Editor of THE LANCET.

SIR,—Dr. Fraser and Mr. Tankard, in their letter of May 31st, appear to assume that the supply of iodine to the body is principally through drinking water. I am not aware that any such suggestion has ever been made, although drinking water has been utilised as a medium for increasing the iodine intake of a town population.

The amount of iodine in the food and drink of a locality depends, no doubt, upon the amount in the superficial layers of the soil, and has no relation whatever to the deep geological formations and the waters derived from them. The intake of iodine in drinking water is probably extremely small, the body being supplied principally through vegetables, cereals, &c., and milk.

McClendon, in America, has made extensive analyses, showing that the amount of iodine varies very greatly in the vegetation of different regions. Similar work in this country is much wanted.

I am, Sir, yours faithfully.

Shrewsbury, July 1st, 1926. JAMES WHEATLEY.

THE NEW HEALTH SOCIETY.

To the Editor of THE LANCET.

SIR,—In your editorial comment on Sir George Newman's Memorandum on the Practice of Preventive Medicine you justly term this aspect of medical practice the "fundamental principle of the future work of the medical student." Are we of the present rank and file of the profession adequately upholding this principle and putting it into practice? Or is it not the case that we are too deeply immersed in the

toil and anxiety of our endeavours to promote the cure of disease, to be able to find time and opportunity to deal with the individual on preventive lines? Are we trying sufficiently to educate the public to seek medical advice as a preventive rather than a curative measure? Are we instilling day by day into those who look to us for counsel the simpler precepts of healthy living? We venture to think we are not. Health and the avoidance of disease depend upon our environment and our reaction thereto. That the more important part of the bodily environment is determined by the individual needs no pointing out; nor the fact that unless the individual is educated in the means by which he shall adjust and control that environment he cannot be expected to succeed in attaining health.

This is the fundamental idea and purpose underlying the foundation of the New Health Society. Its programme is directed to translating for popular understanding and conveying to the masses the knowledge of the principles of healthy living, to teach the importance of such elementary factors as right food, intestinal cleanliness, exercise and sunlight in the care of the body. We offer its machinery and facilities for the use of the medical practitioner and the medical officer of health, and we appeal to our colleagues for their sympathy, support, and cöoperation in the work we have undertaken.

We are, Sir, yours faithfully,

(Signed) S. HENNING BELFRAGE, M.D.
BRUCE BRUCE-PORTER, K.B.E., C.M.G., M.D.
HAROLD CHAPPLE, M.Ch., F.R.C.S.
ERNEST CLARKE, M.D., F.R.C.S.
IVO GEIKIE COBB, M.D.
KENNETH GOADBY, K.B.E., L.R.C.P., D.P.H.
L. HADEN GUEST, *M.C.*, M.P., M.D.
ALFRED JORDAN, C.B.E., M.D.
W. ARBUTHNOT LANE, Bart., C.B., M.S., [F.R.C.S.
NATHAN MUTCH, F.R.C.P.
HERBERT J. PATERSON, C.B.E., M.C., F.R.C.S.
CALEB WILLIAMS SALEEBY, M.D., F.R.S.E.
WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P.
LEONARD WILLIAMS, M.D.

46, Southampton-row, W.C., July 6th, 1926.

TUBERCULOSIS IN THE SHETLAND ISLANDS.

To the Editor of THE LANCET.

SIR,—Extracted for us by Dr. H. Scurfield in the June *Bulletin of Hygiene* is a report by Dr. J. Crawford, medical officer of health, County of Zetland Mainland District, on the tuberculosis mortality in and about Lerwick. "Tuberculosis in the Shetland Islands would seem to afford material for an extensive study of the ætiology of the disease." This is Dr. H. Scurfield's remark on the report.

My ignorance on the ætiology of tuberculosis in the broadest of its aspects is my excuse for the following suggestion, for I believe a similar want of data to be general amongst those who know. In the report will be found that of 117 cases of tuberculosis notified during 1924, 16 were of the non-pulmonary type. "This is interesting because in the sanitary inspector's report we learn that the cattle slaughtered in the islands seldom show signs of tuberculosis, from which we might expect non-pulmonary tuberculosis to be uncommon" (Dr. Scurfield's extract). Now why should we expect any such thing? Of joint and bone lesions in 14 subjects investigated by the English Commission all save one, which was mixed infection, were human tubercle; of 29 abdominal tubercle, 13 were human in type of bacillus; of 9 cervical gland cases, 6 were human in type. Why should the fact that 16 out of 117 Shetland cases are non-pulmonary constitute the unexpected? Not, certainly, because there is scanty bovine tubercle in the cattle of the islands.

I would have expected less tubercle all round if here had been bovine tubercle in the islands. In stating this, I show, at once, my ignorance and some of the lines along which investigation to the much desired enlightenment should, in my humble opinion, proceed.

1. The Shetland children should be subjected to some test (which I believe is not beyond our stage of knowledge to devise) and their deduced immunity (or want of it) compared with that of a comparable batch of English children who get a regular ration of tubercle in their cow's milk.

2. The cows should be tested to show how much immunity they can confer by tubercle vaccination through the milk drunk and meat eaten, and for confirmation of the sanitary inspector's report as to relative absence of bovine tubercle in the herds.

3. Every human case of tubercle should be examined as to the type of bacillus.

It may happen, *for anything we know to the contrary*, the parlous alleged incidence of tubercle in the Shetlands is resultant on the comparative absence of the bovine strain in the islands and consequent absence of the modicum of immunity the ingestion of constant submorbific doses of the bovine bacillus may confer in counteraction of the human type of the disease.

I am, Sir, yours faithfully,

W. M. WILLOUGHBY,
Gravesend, July 5th, 1926. M.O.H., Port of London.

SOME RECENT STUDIES OF DYSENTERY: A CORRECTION.

To the Editor of THE LANCET.

SIR,—In an article in THE LANCET last week (July 3rd, p. 36) I am credited with having introduced a method of treating bacillary dysentery with castor oil as opposed to saline aperients. This is incorrect. The castor oil treatment of bacillary dysentery was originally suggested by Dr. T. B. Welch and Dr. C. J. Mascarenhas, of the Kenya division of the East African Medical Service in a paper in the *Kenya Medical Journal* (August, 1924).

My paper was merely a statistical record of our experiences along the same lines in Uganda.

I am, Sir, yours faithfully,

ARTHUR J. BOASE,
East African Medical Service.

New Malden, Surrey, July 2nd, 1926.

DONATIONS AND BEQUESTS.—Mr. Edmund Turner, of Manchester, left by will £3000 to his sister Janet for life, and then for Ancoats Hospital and £2000 to his sister Helen for life, with remainder to the Manchester Royal Infirmary.—The late Mr. William Shaw, J.P., of Martello House, Holywood, Co. Down, left, among other bequests, £1000 to the Royal Victoria Hospital, Belfast, to endow a ward to be called the "Shaw Holywood" Ward.

STATE INSURANCE IN SCOTLAND.—The second valuation of the Scottish approved societies shows a gross surplus of rather more than £4,000,000, of which it is expected that at least £2,500,000 will be available for distribution among 1,700,000 insured persons. Every society shows a surplus, and in some instances it is very large. Sir James Leishman, of the Scottish Board of Health, who communicated these figures to the annual meeting of the Scottish Conference of Friendly and Approved Societies last week, expressed a hope that "the medical practitioners of Scotland were not going to arouse a great distrust in their integrity, judgment, and courage, even in the face of pressure, which is undoubtedly being brought to bear upon them" in the matter of certificates of atness for work.—The Board of Health has issued a circular to insurance practitioners stating that, owing to a sudden increase in the certification of claims for sickness and disablement benefit, the expenditure of representative approved societies has practically doubled since the beginning of May. In places the expenditure is four or five times as much as is usual at this time of year. Investigation seems to indicate that a less stringent view of the statutory condition for the receipt of sickness and disablement benefit has recently been taken, and the Board draws attention to the statutory condition for payment of benefit under the National Insurance Act—viz., that the insured person shall be rendered incapable of work by some specific disease or by bodily or mental disablement.

Obituary.

WILLIAM HENRY CLAYTON-GREENE, C.B.E., M.B., CH.B. CAMB., F.R.C.S.,

CHEVALIER OF THE LEGION OF HONOUR.

LESS than two years after his withdrawal, when still under 50, from London surgical activities to the amenities of a much less strenuous life at Guernsey, W. H. Clayton-Greene died on June 29th after only two days' illness. No rumour of his indisposition had reached his friends, who were shocked by the bald announcement of his sudden death when they had imagined him enjoying the quiet leisure for which he had sacrificed a brilliant career. At the time of his early retirement many rumours were current as to its cause. The truth was that at an age when most men are still making their reputation Clayton-Greene had long been in demand as a consultant by consultants; this type of surgical practice means an unduly large proportion of very severe cases, and involves a strain which, having accumulated a competence, he felt no longer impelled to bear. It was by no means a complete withdrawal from all professional connexions, because as surgical partner in a firm of general practitioners at Guernsey he continued to do fine work. It is a satisfaction to his friends that his two years there were happy ones and that he had no regrets.

W. H. CLAYTON-GREENE.

W. H. Clayton-Greene was born in 1874 and educated at Rossall and Corpus Christi College, Cambridge. He entered at St. Mary's Hospital in 1898 with the open University scholarship, and later won the Kerslake scholarship in pathology and bacteriology. He qualified M.R.C.S., L.R.C.P. in 1900, and in the following year took the M.B., Ch.B. Camb. and the F.R.C.S. He proceeded rapidly from posts as house surgeon and surgical registrar to that of surgeon to out-patients at St. Mary's in 1905, when he was also appointed lecturer in anatomy to the medical school. In 1911, when he was only 37, a vacancy on the full surgical staff of the hospital led to his promotion, and he held the post of surgeon to in-patients from that date until, in 1924, the unwelcome news of his retirement to the consulting staff caused real regret among colleagues and students. From 1907 to 1910 Clayton-Greene was Dean of the medical school of St. Mary's. He was for a time surgeon to the French Hospital, to the Hampstead General Hospital, and to the Radium Institute, and during the war to the King George Hospital and to King Edward VII. Hospital for Officers.

Clayton-Greene served as an examiner—vigilant to maintain a high standard while not unsympathetic to those who fell below it—to many examining boards, including the University of Cambridge, the Royal College of Surgeons of England, the Conjoint Board, and the Society of Apothecaries. He wrote comparatively little—to the lasting regret of his pupils; his articles in the "Index of Treatment," edited by R. Hutchison and J. Sherren, and the later editions of Pye's "Surgical Handicraft," which was largely rewritten by him, crystallised some of his ward teaching, but too much of it remains unrecorded. His incisive delivery and a somewhat dogmatic manner made him a popular lecturer. He would stride into a lecture theatre, start speaking almost before he had reached the table, and give a balanced and critical discourse on any subject in surgery. There was no disease, however obscure its pathology or indefinite its course, that he could not fix as a clear picture in the minds of his hearers. Students took no liberties with Clayton-Greene; few dared to be late at his classes or operations; his own punctuality was disconcerting, for he always seemed to be ready in advance of time, seated in the theatre, impatiently swinging a leg. To be house surgeon to Clayton-Greene was the ambition of every St. Mary's student, and no better training in efficient workmanship could be found. True, he did not suffer fools gladly, and he was unsparing in his condemnation of any slackness or inefficiency which endangered the success of an operation, or militated against the comfort of a patient. To those who showed ability and zeal he was always willing to give help from his wide experience, and, when this seemed to conflict with accepted teaching, to discuss the points at issue.

Clayton-Greene's operative skill and precision and judgment were famous outside his own school, and drew visitors from other hospitals at home and abroad to his demonstrations. He was a dramatic figure in the London surgical world, and many who had not the privilege of knowing him personally will regret his untimely death.

A former colleague writes:—"It is nearly 30 years since I first met Clayton-Greene, and every year of our friendship has only served to deepen and confirm my first impressions of him. One could not be with him for more than a very short time without realising that one had to deal with a man of very marked individuality, and of more than average ability. Others can speak of his technical skill as a surgeon, of his wonderful teaching powers, of his intimate and detailed knowledge of everything which bore on the science of his profession. Only to those who lived with him was it given to know what anxious thought he gave all the time to every case under his care, and how much of his life he gave to his patients. In his earlier days, when serious cases were not so numerous in his practice as they became later, there was an unfailing barometer of how any bad case was doing. When he was very worried, he had a little habit of twisting his hair into points. If things were going well, bedtime would come and the dark hair lay smooth on his temples; but if a case was not doing well, a fringe of twisted points stuck up along his forehead. There have been great surgeons who have been able to put completely out of their minds any case except when it was immediately before them; who, when they have done all that their skill can do, can go away with an easy mind. Others equally great seem to have their cases always before their eyes and always in their minds, and it was to this second class that Clayton-Greene belonged.

"In little things he could be brusque and off-hand in manner, but in the more serious matters of life he had a depth and sincerity of feeling that, once

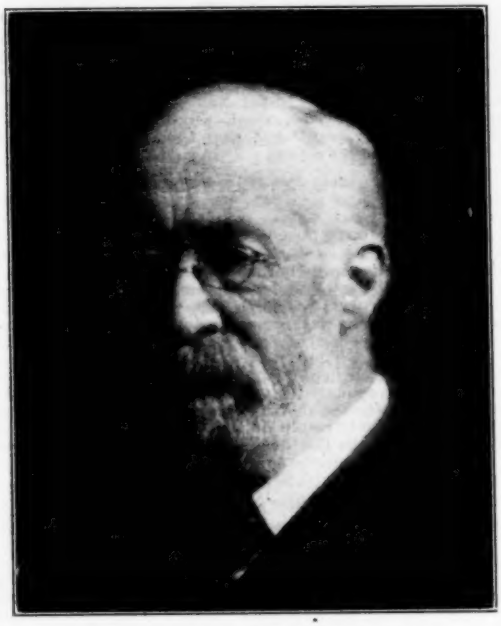
experienced, formed an unbreakable bond of friendship and love. Few men have more deeply impressed themselves on their generation and seldom has a man been so much missed as 'Clayton' has been at St. Mary's."

Mr. Clayton-Greene leaves a widow and two children, to whom the sympathy of all his friends and colleagues will be extended.

JOHN THOMSON, M.D., LL.D. EDIN., F.R.C.P. EDIN. & LOND.

Dr. J. Thomson died at his home in Edinburgh on July 2nd, and by his death the science and practice of pædiatrics have suffered a great loss. He was a recognised leader in that branch of medicine, and his reputation was world-wide.

John Thomson was the son of Thomas Thomson, Writer to the Signet, and was born in Edinburgh in 1856. He was sent to Edinburgh Academy and Edinburgh University, and, except for a period of study in Berlin and Vienna and a term of duty as resident medical officer at the Hospital for Sick Children, Great Ormond-street, London, his life work was done in Edinburgh. Soon after graduating, in 1881, he began to specialise in diseases of children. His work with Prof. Henoch in Berlin had confirmed a natural bent, and for over 40 years he worked at



JOHN THOMSON.

his subject with an interest that was always intense and that seemed to deepen and broaden without losing any of its heat as the years went on.

In 1888 he became a Fellow of the Royal College of Physicians in Edinburgh. In the following year the New Sydenham Society published his translation of Henoch's "Diseases of Children," and a long association with the Royal Hospital for Sick Children was begun with his appointment as assistant physician. Nine years later, as the result of his teaching experience there, he published "The Clinical Study and Treatment of Sick Children," a book which established his reputation as one of the most careful clinical observers of his day. The most striking characteristic of his work was its accuracy and thoroughness; all that he wrote was based on his own experience and he never wrote until he was sure. At a time when the growth of bacteriology and biochemistry seemed to threaten that the medical practitioner would become a mere collector of material for the laboratory specialist, he was born to demonstrate the value of clinical tradition. An excellent memory and a systematic mind enabled him to control the mass of detail which he observed, and to reduce it to order for the benefit of medical practitioners in his books and papers, and like his friend, the late Sir James Mackenzie, he had an almost passionate desire to get at the truth.

As a teacher Thomson excelled in the out-patient room and at the bedside, where his painstaking investigation of cases and his kindly dealing with the little patients and their mothers were an example and inspiration to his students. In the lecture-room his natural diffidence made him less impressive, though the substance of his teaching was always of the highest order. At the time when he began practice in Edinburgh there were few facilities for the study of the diseases of children. The change that has taken place was to some extent inevitable, but was hastened by his influence. He started an out-patient clinic for children in connexion with the New Town Dispensary. He had much to do with the founding and working of the Edinburgh Cripple Children's Aid Society, and for over 20 years he conducted a weekly out-patient clinic for mentally defective children at the Royal Hospital for Sick Children, the only one of its kind in this country. He succeeded the late Sir William Gairdner as honorary consulting physician to the Royal Scottish National Institution for mentally defective children at Larbert. By his work on mental deficiency in children he did much to draw attention to its importance, and was largely responsible for the interest now taken in it everywhere. In late years the value of his services was generally recognised and only a few months ago the Royal College of Physicians of London conferred on him an honorary Fellowship at which he was greatly pleased.

The usefulness of Thomson's life, however, is only feebly reflected in a list of academic honours, and an indication of it may rather be found in his written work and in the tribute of those who learned from him. Of his many contributions to the literature of pædiatrics, perhaps the most valuable were those on congenital hypertrophic pyloric stenosis and on *B. coli* infections of the urinary tract in childhood, both of which subjects he did much to bring to the notice of the profession in this country. His deep interest in the problems of mental deficiency led to the publication of a booklet entitled "Opening Doors," written to help the mothers of these unfortunate children, which is full of sympathetic insight and charm, and reflects the courage and hopefulness with which he faced the difficult cases they presented. His chief literary monument, however, is his great text-book which, embodying as it does the observations and experience of a life time, is a mine of valuable and accurate information. Fortunately, he had been able to complete a new edition of it shortly before his death.

"When all is said," writes Dr. Robert Hutchison, "it is not as the accomplished physician and great clinical observer and teacher that his friends and pupils will always remember John Thomson, but as the humble-minded Christian gentleman that he was. Modest to a fault in his estimate of his own achievements, he was always charitable in his judgment of others. He was, indeed, full of charity in the Apostle's sense; he was long suffering and kind, he envied not, vaunted not himself, was not puffed up, thought no evil. It was surely fitting that his whole life should have been devoted to the welfare of children, for he had in his own character much of the simplicity and artlessness of the child, and of such we know, is the Kingdom of Heaven."

Dr. Thomson married, in 1887, Isobel, daughter of the Rev. John McPhail, of Benbecula, who survives him. He leaves three sons and two daughters.

WALTER FRANCIS RAPHAEL CASTLE, D.S.C., M.D. CAMB., M.R.C.P. LOND.

BY the death of Dr. Walter Castle, on July 1st, the medical profession loses a man who showed every promise of attaining to the front rank. He died at the age of 34, and his medical career was interrupted for several years by the war; but in a comparatively short period of practice he had made himself an able dermatologist. Educated at Wellington, Castle distinguished himself in all forms of sport and was head of his house. He was for two years in the Eleven and in the Fifteen for three; whilst still a schoolboy he played for the Harlequins. At school he was undefeated at every distance at swimming, and he won the silver medal for the Public Schools heavy-weight boxing. A damaged hand, however, prevented his winning further distinction in sport when he went up to Trinity College, Cambridge, where he studied for medical degrees. In 1913 he took the Natural Sciences Tripos (Part I.) and went on to the London Hospital, where he made many friends. His success as a student seemed assured, but the natural sequence of events was changed in the following year when the war broke out, and Castle became a surgeon-probationer in the Navy. In 1916 he took the L.M.S.S.A. and afterwards he was promoted surgeon, serving first in the North Sea and then in the Baltic. Whilst on duty with the Archangel Expedition he was awarded the Distinguished Service Cross for conspicuous gallantry. After the war he settled down again to the medical career he had chosen, graduating in medicine at Cambridge in 1920 and proceeding to the M.D. degree in 1923. A year later he became M.R.C.P. Lond., and as dermatologist to the Queen's Hospital for Children, to the West End Hospital for Nervous Diseases, and to the Kensington, Fulham, and Chelsea General Hospital, was gaining valuable experience which had already borne fruit in a number of original articles in medical journals. "His patients," writes a colleague, "will remember him as a man of surpassing kindliness, who spared himself no trouble on their behalf, quick and just in judgment, with the inestimable gift of 'being right.' To his friends he will remain for all time the dearest, most open-hearted of men: his kindly words, his cheery smile, his apt remark for the occasion are indelibly impressed upon our memories."

In 1921 Dr. Castle married Kathleen, daughter of Mr. and Mrs. Charles D. Seligman. He leaves a son and a daughter.

THE LATE DR. NEIL MACLAY.—The death took place suddenly on June 21st, at Bamburgh, of Dr. Neil Maclay, of Newcastle-on-Tyne, at the age of 53. Dr. Maclay had gone to Bamburgh for a short holiday. He studied at the University of Glasgow and qualified M.B. and C.M. in 1895. For many years he had practised as a throat, nose, and ear specialist in Newcastle, where he was hon. surgeon to the Throat and Ear Hospital, and aural surgeon to the Infectious Diseases Hospital. He was also a trustee of the Throat and Ear Hospital, and was a past-president of the Newcastle Glasgow University Club. Dr. Maclay contributed numerous articles to medical journals. He leaves a widow and one son.

TREATMENT CENTRES FOR VENEREAL DISEASE.—A schedule of centres approved by the Minister of Health (June, 1926) for the treatment of venereal diseases has been issued by the Ministry. The days and hours of the clinics, and the facilities for irrigation treatment of gonorrhœa are detailed in the list, which supersedes that published in May, 1924.

NEW HOSPITAL AT BARTON-UPON-IRWELL.—The Earl of Derby and Sir Thomas Robinson, M.P., on July 2nd, laid the foundation-stones of the Poor-law Hospital at Davyhulme, near Manchester, to be erected by the guardians of the Barton-upon-Irwell Union, at a cost of over a quarter of a million pounds. The hospital will have a maximum accommodation of 500 beds. It will be known as the Park Hospital and will serve ten parishes with a population in the area of 170,000.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Dentists Bill.

THE Bill presented in the House of Commons by Mr. ALBERT ALEXANDER, and supported by Mr. BARNES, Mr. ROBERT MORRISON, Mr. THOMAS HENDERSON, and Mr. WILLIAM HIRST, to amend the Dentists Act, 1921, provides in the first clause that nothing in Section 5 of the Dentists Act, 1921, shall operate to prevent the carrying on of the business of dentistry by a society registered under the Industrial and Provident Societies Act, 1893, or the Friendly Societies Act, 1896: (*a*) if the business of such society, so far as it relates to the business of dentistry, is under the control and management of a superintendent who is a duly registered dentist, whose name has been forwarded to the registrar appointed under the Dentists Act, 1921, to be entered by him in a register to be kept for that purpose; (*b*) if in every premises where such business is carried on, and is not personally conducted by the superintendent, such business is bona fide conducted by a manager or assistant who is a duly registered dentist; (*c*) if all the operating staff are registered dentists.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 30TH.

Venereal Disease in the Navy.

Mr. BASIL PETO asked the First Lord of the Admiralty whether the incidence of venereal disease in the Navy had increased or diminished in the last three years, and what was the general view of the Naval Medical Service as to the value of the preventive measures that had been employed.—Mr. BRIDGEMAN replied: For the years 1922, 1923, and 1924 (the latest for which figures are available) the statistics indicate a slow but steady decrease in the incidence of venereal diseases in the Royal Navy. Various preventive measures are employed—moral, physical, and medical—and it is generally considered that these have contributed collectively to the reduction.

Invaliding Procedure in the Navy.

Mr. HORE-BELISHA asked the First Lord of the Admiralty what procedure was followed in the case of those men invalided from His Majesty's Navy who desired to question the decision of the medical officer, which deprived them of pension rights; and whether the medical officer's report, which was the basis of the complaint, was referred to and taken as evidence of the correctness of that report.—Mr. BRIDGEMAN replied: All representations made by the rating prior to the medical survey are carefully considered by the Board of Survey. These and any further representations made by him or on his behalf subsequent to the invaliding are carefully investigated by the medical authorities at the Admiralty in conjunction with the rating's medical history and with reference to conditions of his service. Any medical report which may be the basis of the complaint is referred to and taken as evidence subject to further investigations or other evidence.

Margarine for Butter in Poor-law Institution.

Mr. LANSBURY asked the Minister of Health whether he consulted his medical advisers before recommending the West Ham board of guardians to substitute margarine for butter in the dietaries prescribed for patients in the institution at Whipps Cross, and whether he would lay on the table of the House any statement he had received from such advisers wherein it was stated that the dietetic value of margarine was equal to that of butter.—Sir KINGSLEY WOOD replied: My right hon. friend has not recommended the West Ham board of guardians to make the substitution suggested. The dietary of this institution is supervised by the medical officer of the institution. With regard to the dietetic value of margarine I may refer the hon. Member to the special report on "Diet in Relation to Normal Nutrition," issued by my department in 1921.

Feeding of Miners' Children.

Sir HARRY BRITTAIN asked the Minister of Health what attention was being given to the feeding of miners' children affected by the coal stoppage, whether reports had been received from the different sections of the country involved, and, if so, what was the nature of those reports.—Mr. NEVILLE CHAMBERLAIN replied: I am keeping in constant touch through my general inspectors with the areas affected by the coal stoppage, and in reporting to me they have, at my request, paid special attention to the condition of the children. A large amount of assistance is being given by the supply of meals and other food, and there is no evidence of malnutrition of children.

THURSDAY, JULY 1ST.

Death in Bedford Prison.

Mr. PETHICK-LAWRENCE asked the Home Secretary whether he had any further statement to make with regard to his action relating to the death of Mr. Reginald Russell in Bedford prison on May 23rd.—Sir W. JOYNSON-HICKS replied: I have now given directions that the engagement of the prison medical officer, which was suspended in the course of the inquiry, shall be terminated, and that the governor, who has reached pensionable age, shall be required to retire from the service and be relieved from duty forthwith. The chief officer who has been on probation will be transferred to another prison in his former rank of principal officer, and the hospital officer will be reprimanded.

New Factories Bill.

Lord HENRY CAVENDISH-BENTINCK asked the Home Secretary whether he proposed under the new Factories Bill to make provision for the better regulation of offices and of underground workrooms.—Sir W. JOYNSON-HICKS replied: I would ask the noble lord to await the issue of the Bill which I hope to introduce this month.

Qualifications of Meat Inspectors.

Mr. HURD asked the Minister of Health what steps were being taken to ensure that inspectors responsible for meat imports had veterinary knowledge so that they might more effectively perform their duties.—Mr. NEVILLE CHAMBERLAIN replied: I am advised that a veterinary qualification, though desirable, is not essential for the examination of imported meat from the public health point of view.

Motorists and Dangerous Driving.

Colonel DAY asked the Home Secretary the number of motorists in England and Wales, excluding the Metropolitan police district, who had been fined for exceeding the speed limit and/or for driving to the danger of the public; the number acquitted and the number convicted for the 12 months to the last convenient date; and the gross amount of fines and the sentences imposed.—Sir W. JOYNSON-HICKS replied: The particulars asked for are not available. In the returns furnished by the police for the purpose of compiling the criminal statistics, cases of these offences are included with other offences under a general heading for offences by motorists.

Syphilis and Gonorrhœa in the Navy.

Dr. VERNON DAVIES asked the First Lord of the Admiralty if he would state the incidence in the Navy at home and abroad of syphilis and gonorrhœa during the last three years for which statistics were available; and in how many of these cases were preventive measures adopted.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: The incidence in the Navy at home and abroad of syphilis and gonorrhœa during the years 1922, 1923, and 1924 (latest figures available), is as follows:—

	Ratio per 1000 sick daily.		
	1922	1923	1924
Syphilis (first record)	0·70	0·96	0·53
„ (latest record)	1·16	1·02	0·84
Gonorrhœa (acute)	3·17	2·89	2·68
„ (sequelæ)	1·28	1·29	1·23

He expressed regret that no statistics were available of the number of cases in which preventive measures were adopted.

MONDAY, JULY 5TH.

Venereal Disease among Civil Population.

Dr. VERNON DAVIES asked the Minister of Health if he had any evidence showing a lessened incidence of venereal disease amongst the civil population of this country, and, if so, had he formed any opinion as to the cause of this diminution.—Mr. NEVILLE CHAMBERLAIN replied: As my hon. friend is no doubt aware, there is no compulsory notification of cases of venereal disease in this country. I am, however, advised that the returns received from the treatment centres indicate that there has been a considerable reduction during the past five years in the incidence of these diseases, and particularly of syphilis, amongst the civilian population. One of the objects of the centres is to render the patients non-infective with a view to preventing the spread of venereal diseases, and I am advised that this part of the work of the centres has contributed specially to the decline in the incidence of these diseases. I may refer also to the fact that the recorded mortality from syphilis, and other conditions due to syphilis, has fallen considerably since the institution of special measures for the treatment of venereal diseases.

Colonial Medical and Sanitary Services.

Mr. HERBERT WILLIAMS asked the Secretary of State for the Colonies whether his department was organised solely on a regional basis or whether, in addition to the regional organisation, there was a staff devoted to the study of the various problems of health, agriculture, veterinary services, and geological survey.—Mr. AMERY replied: The Colonial Office is organised primarily on a regional basis. There is also a general department, which is concerned with correspondence of a general and miscellaneous character. The study of the various problems mentioned in the question is promoted by reference to various committees, and expert advisers such as the Colonial Advisory Medical and Sanitary Committee, the Colonial Survey Committee, &c. I have also recently appointed a chief medical adviser to the Colonial Office, who will advise me on medical and sanitary problems arising in connexion with the colonies and protectorates.

Local Authorities and Mental Defectives.

Sir COOPER RAWSON asked the Minister of Health if he had received representations from local authorities with regard to the increase of mental defectives in the country and the increasing cost of maintaining and extending institutional treatment, the effect of which was usually unsatisfactory and ineffective; and whether he had considered the desirability of introducing legislation for compulsory segregation or such other methods as might be considered necessary for preventing an increase in the number of cases.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative, but my right hon. friend is not aware of evidence to indicate that the incidence of mental defect is increasing. Though the cost of maintaining and extending institutional treatment is heavy my right hon. friend cannot accept the suggestion that it is usually either unsatisfactory or ineffective. The Mental Deficiency Act of 1913 already provides machinery by which defectives can be segregated or placed under guardianship or supervision. The absence of sufficient institutional accommodation is hampering the operation of the Act, and local authorities have been urged to make further provision.

Kingston Nursing Association.

Mr. PENNY asked the Minister of Health if he could give the name and qualifications of the medical officer appointed by his department to inquire into the administration of the Kingston Nursing Association, and whether any previous investigations had been carried out in regard to the association.—Sir KINGSLEY WOOD replied: The officer in question is a member of the medical staff of the Ministry of Health, but my right hon. friend does not think any useful purpose would be served by giving the officer's name. For the decisions based on the investigation of this officer, however, I may refer my hon. friend to the Minister's letter to the chairman of the Association (see THE LANCET, p. 103) of which I am sending him a copy. The maternity home belonging to the Association had been inspected on two previous occasions by medical officers of my right hon. friend's department in 1921 and 1925.

New Draft Milk and Dairies Order.

Brigadier-General CLIFTON BROWN asked the Minister of Health whether he was issuing a new draft Milk and Dairies Order; if so, on what date was it proposed that the Order should come into operation, and when would copies of the Order be available.—Sir KINGSLEY WOOD replied: Yes, Sir. The Order has now been settled and will come into operation on Oct. 1st. Copies should be available in the course of a week or so.

Naval Hospital at Hong-Kong.

Mr. PENNY asked the First Lord of the Admiralty whether he would consider the desirability of disposing of the naval hospital at Hong-Kong, in view of the offer from the Hong-Kong Government to place a special department of the new nursing home being erected there at our disposal.—Mr. DAVIDSON replied: I am not aware of any offer on the lines suggested by my hon. friend.

TUESDAY, JULY 6TH.

R.A.M.C. Increases of Pay.

Sir FREDRIC WISE asked the Secretary of State for War what was the extra cost for certain increases in the rates of pay, retiring gratuities, &c., of the Army Medical Corps, Dental Corps, and Veterinary Corps.—Sir L. WORTHINGTON-EVANS replied: The extra cost is estimated at £76,000 per annum.

Death and Sickness Rate in Gold Coast.

Lieut.-Commander KENWORTHY asked the Secretary of State for the Colonies the death and sickness rate amongst the natives employed in the gold-mining industry of the Gold Coast Colony during the last complete year for which statistics are available.—Mr. ORMSBY-GORE replied: From figures which have been supplied to me by the officer administering the government of the Gold Coast, it would appear that the death-rate per 1000 amongst all labour, surface and underground, in the gold mines in the Gold Coast is approximately 8·3. No reliable figures are available as to the sicknesss rates.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At congregations held on June 26th and 29th the following degrees were conferred:—

M.D.—F. A. Phillipps, F. H. Young, C. H. Whittle, F. B. Smith, and J. M. Smith.
M.Ch.—T. M. Thomas.
M.B. and B.Ch.—N. T. Glynn, C. C. Halliwell, K. Fletcher-Barrett, and L. P. Marshall.
B.Ch.—A. C. Copley, J. B. Ellison, F. W. Roques, H. M. Woodman, J. A. S. Brown, and H. B. Trumper.

At the third examination for medical and surgical degrees held recently the following candidates were examined and approved:—

Part I., Surgery, Midwifery, and Gynæcology.—J. R. Armstrong, B. Blaxill, R. D. W. Butler, G. D. G. Cameron, H. M. Elliott, R. W. B. Ellis, T. I. Evans, R. M. Gilchrist, E. J. Greenwood, G. J. Gross, M. J. Harker, L. J. Haydon, A. J. Johnson, F. W. Law, D. F. Lawson, R. Marnham, R. W. L. May, E. D. Moir, J. W. Munro, J. Morris, C. G. E. Plumstead, D. S. Tait, G. F. Taylor, R. J. Vince, F. H. A. Walker, V. Wigglesworth, R. W. Windle.

Part II., Principles and Practice of Physic, Pathology, and Pharmacology.—B. E. Ahrens, G. L. Alexander, J. O. W. Bland, C. K. Colwill, W. F. Cooper, R. K. Debenham, T. S. Dewey, H. V. Dicks, J. Dockray, A. B. Eddowes, J. B. Ellison, T. F. Fox, H. F. Griffiths, J. H. Hannan, H. J. Heathcote, G. G. Holmes, I. A. Jackson, D. McI. Johnson, S. Levy-Simpson, W. W. McLean, R. H. Metcalfe, R. D. Milford, H. P. Nelson, H. W. Nicholson, F. B. Parsons, W. Richards, L. A. Richardson, F. W. Roques, K. G. Salmon, G. Simon, R. E. Smith, A. W. Spence, R. S. Starkey, B. C. Tate, H. B. Trumper, V. B. Wigglesworth, J. G. Wigley, H. J. Wilson, F. G. Winterton, A. T. Worthington, H. R. Youngman.

UNIVERSITY OF GLASGOW.—The degree of Bachelor of Medicine and Bachelor of Surgery has been conferred on Eric G. Oastler (with commendation).

UNIVERSITY OF SHEFFIELD.—At the undermentioned examinations held recently in the Faculty of Medicine the following candidates were successful:—

M.D.—Annie Clark.
Final M.B., Ch.B. Examination.—James H. Blakelock, James H. Fairclough, Aziz Isaac, and John D. Young.

UNIVERSITY OF LEEDS.—At a congregation held on July 3rd the following degrees were conferred:—

M.D.—Arthur L. Taylor (with distinction), David R. Allison, and Philip Rosenbloom.
Ch.M.—George Armitage.
M.B., Ch.B.—Frederick K. Beaumont, William D. Bedford, and Stanley J. Hartfall (with second-class honours), Arthur Barratt, William H. Carr, Joseph E. Erdheim, Denzil Heap, Cai C. Holm, Emily E. Johnson, Alec Katz, Nathan Newman, Leonard B. Pawson, Max Perlman, Malcolm S. Scott, Sam Silverman, John E. Teal, Arthur C. Welch, John V. Whitaker, and Eric W. L. White.

UNIVERSITY OF BIRMINGHAM.—At a congregation held on July 3rd the following degrees were conferred:—

DEGREE OF DOCTOR OF MEDICINE.

Gladys M. Evans and Victor G. Williams.

DEGREES OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Marjorie E. Crump, Athol F. Downie, Margaret L. A. Galbraith, Louis Glass, Joseph G. Green, Joan E. Greener, Gilbert S. Hall, David Humphreys, Roberta I. Hutchinson, Marie E. Jackson, Allan J. Lea, John H. Marshall, Cecil A. Mather, Bernard L. S. Murtagh, Albert V. Neale, Hugh S. H. O'Conor, Dorothy E. A. Reader, Niel S. Robinson, Gilbert de Neville U. Somers, Wilfred Summers, Percy Symons, Alexander C. R. Walton, John D. H. Wearing, and Nellie Wilkes.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual meeting of Fellows of the College to elect four members of the Council was held on Thursday, July 1st, the President, Sir John Bland-Sutton, being in the chair. There were 12 candidates for the four vacancies. The President declared the following elected: Mr. Ernest W. Hey Groves with 532 votes, Mr. George Grey Turner with 426 votes, Mr. Vincent Warren Low with 398 votes, and Mr. Victor Bonney with 361 votes. Only four Fellows voted in person.

ROYAL SOCIETY OF MEDICINE.—The Section of Anæsthetics will be welcoming American and Canadian anæsthetists at a meeting to be held at 1, Wimpole-street, London, W., on Tuesday, July 13th, at 10 A.M., when papers will be read by Prof. J. S. Haldane, Mr. T. P. Dunhill, and Dr. J. Blomfield. At a second meeting on Thursday, July 15th, at 10 A.M., there will be an American session. On Wednesday, July 14th, the section will give a complimentary dinner to the visitors and their wives.

WILLIAM GIBSON RESEARCH SCHOLARSHIP FOR MEDICAL WOMEN.—The Council of the Royal Society of Medicine has awarded this scholarship to Miss Alice Bloomfield, who will hold it for two years.

MENTAL HOSPITALS ASSOCIATION.—The eighth annual meeting of this Association will be held in the Council Chamber of the Guildhall, London, on Wednesday, July 14th, at 11 A.M.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.—A complimentary dinner was given to the President of the London and Counties Medical Protection Society, Sir John Rose Bradford, on June 29th, at the Grand Hotel to celebrate his recent election to the presidency of the Royal College of Physicians of London. Dr. C. M. Fegen, Chairman of Council, occupied the chair, and was supported by the vice-presidents and members of Council, including the legal officers of the society.

INTERNATIONAL POST-GRADUATE COURSE AT KARLSBAD.—A course in medicine, with special reference to balneology, will be held at Karlsbad from Sept. 12th–18th. Amongst well-known medical men from many countries who are to give lectures will be Prof. George Barger, of Edinburgh, who will speak on the Chemistry of the Hormones. Foreign doctors attending the course will receive special facilities from the Czecho-Slovakian government and from the municipality of Karlsbad. Further information may be had from the secretary of the course, Dr. Edgar Ganz, Karlsbad.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—The presidential address of this Association will be delivered on Tuesday, July 13th, at 3 P.M., by Lieut.-Colonel J. R. Lord, C.B.E., at the house of the B.M.A., Tavistock-square, W.C., the subject being the Clinical Study of Mental Disorders. On Thursday, July 15th, at 3 P.M., the Maudsley lecture will be delivered by Prof. G. M. Robertson, President of the Royal College of Physicians of Edinburgh, who in the course of his address will survey the problems presented in the endeavour to prevent insanity. On the same evening the annual dinner of the Association will take place at 7.15 P.M. in the Edward VII. Rooms, Victoria Hotel, London, W.C.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Mr. Rocyn-Jones will give a clinical demonstration in surgery at the Royal National Orthopædic Hospital, on Monday, July 12th, at 2 P.M., and Mr. Griffith will give a demonstration in ophthalmology at the Royal Eye Hospital on Wednesday, July 14th, at 3 P.M. These will be open to all members of the medical profession without fee. A post-graduate vacation course will be held from July 19th to 31st at the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham, N. 15); the course is especially intended for medical men and women in active practice. It will consist of morning demonstrations, each day from 10.30 A.M. to 12.45 P.M., on modern clinical and laboratory methods included under the name of side-room work, demonstrations of groups of selected cases from 2 to 2.45 P.M. each day and from 2.45 P.M. onwards of general hospital work, in-patient and out-patient clinics, operation, and demonstration in the special department. At 4.30 P.M. daily there will be a clinical lecture; the opening lecture of the first week will be given by Dr. T. W. Eden on Antenatal Care as it Affects the Child in utero, and that of the second week by Lieut-Colonel L. W. Harrison on the Diagnosis and Treatment of Syphilis, will be illustrated by a cinematograph demonstration. Visits will be made to a fever hospital and a mental hospital on Saturday mornings. The names of those wishing to attend should be sent in, if possible, by July 16th. There will be a late afternoon course (from 5 P.M.) at the West End Hospital for Nervous Diseases from July 19th to August 12th. Lectures and demonstrations on selected cases will be given in the out-patient department, 73, Welbeck-street, London, W., and there will be a pathological demonstration at the in-patient department, Gloucester-gate, N.W., on Monday, July 19th. Practical courses in obstetrics and child welfare are to be held throughout the year at the City of London Maternity Hospital. The courses will last one week and the fee is £2 2*s*. Practical courses in anæsthetics can be arranged at any time. From August 9th to 14th there will be an intensive course at the Brompton Hospital; from August 16th to 28th an all-day course in diseases of children at the Queen's Hospital; and from August 23rd to Sept. 7th an all-day course in medicine, surgery, and the specialities at the Queen Mary's Hospital. Copies of all syllabuses, of the general course programme, and of the *Post-Graduate Medical Journal*, may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

ROYAL HOSPITAL, MORNINGSIDE.—A luncheon will be given by the Chairman and Managers of the institution at Vogrie on Thursday, July 22nd, in celebration of the inauguration of the new nursing home.

ST. BARTHOLOMEW'S HOSPITAL WAR MEMORIAL.—This memorial, which takes the form of an archway under the Great Hall connecting the square and the school, was unveiled by the Prince of Wales on July 8th.

THE LATE LIEUT.-COLONEL LIONEL PISANI, F.R.C.S., I.M.S. (RETD.).—After a short illness Colonel Pisani died on June 22nd in his sixty-fourth year. He was a student at the Charing Cross Hospital, qualified in 1886, and a month later passed into the I.M.S., being placed first on the list of candidates. On arriving in India he was appointed to the guides and saw service on the frontier. From 1890 to 1909 he was in charge of civil districts in the United Provinces. He planned, equipped, and had charge of the Government Hospital at Moradabad, where, in addition to general surgical operations, about 200 cataract extractions were performed annually. Leaving India for family reasons in 1909, he determined to devote himself to ophthalmology, and with this aim and in spite of his large experience in operative work, he entered Moorfields Hospital as a junior assistant, and in due course became chief clinical assistant. In 1911 he was appointed ophthalmic surgeon to the Metropolitan Hospital, and later consulting ophthalmologist to the Metropolitan Asylums Board, in this capacity visiting the asylums at Watford and the schools at Banstead. Pisani was a man of untiring energy; apart from vacation absences, he never missed a day's attendance at hospital, and he visited the Watford Asylum the day before he took to his bed.

PRIZE-GIVING AT THE LONDON HOSPITAL. — On June 28th Mr. Neville Chamberlain, Minister of Health, presented prizes to the students of the London Hospital Medical College. Prof. William Wright, Dean of the College, said that during the year 1925–26, 582 students had been in attendance, 103 of whom had taken medical or dental degrees or diplomas. By resignation the hospital had lost the services of Dr. Russell Andrews, Mr. James Sherren, and Dr. E. W. Clapham, who in their several ways were representative of the London Hospital, and imbued with its finest traditions. Those who had been elected to the staff during the year were: Mr. W. Morris and Mr. Geoffrey Carte as assistant aural surgeons, Dr. A. Maitland-Jones as director of the new department of the diseases of children, Dr. W. J. O'Donovan as assistant physician in the dermatological department, Mr. Victor Lack as assistant physician in the obstetric department, Mr. A. C. Perry and Mr. H. W. B. Cairns as assistant surgeons, Mr. A. G. Allen as dental surgeon, and Mr. Stuart Thompson as assistant anæsthetist. After mention of the various endowments received by the hospital during a memorable year, Prof. Wright referred to the appointment of Dr. S. P. Bedson, Dr. Howard Florey, and Dr. L. Hewitt as workers under the Freedom Research Fund, and concluded by reminding his audience of the quite extraordinary opportunities offered by the London Hospital to students of medicine now that 100 junior appointments were open to recently qualified men and about £100,000 had been made available for research. The facilities for giving a broad, thorough, and modern education, both theoretical and practical, to undergraduates and post-graduates alike were, he considered, greater than those offered by any similar institution in the country. Mr. Neville Chamberlain, having presented the prizes, referred to the possible careers open to the student, emphasising the claims of preventive medicine. From the point of view of a Minister of Health, he said, it was almost impossible to lay too much stress upon the need for continual research. The organisation of medicine in this country was, unfortunately, far from perfect, but it was the task of the Minister to try to adjust defects in the machinery. In this task he asked the coöperation of his hearers. Lord Knutsford, in moving a vote of thanks to Mr. Chamberlain, said that the duty of the hospital did not end when it simply cured the sick who came for help; part of its duty was to discover the causes of the sickness. Unfortunately, at the London Hospital there was a list of over 1100 people waiting for admission, and until recently the lack of funds had prevented adequate endowment of research. Lord Dawson of Penn, seconding the vote of thanks, said that the changes coming over the practice of medicine were likely to be wide and deep. The centre of gravity was drifting away from disease and towards health. The doctor of the future would study early disturbance of function, and it seemed inevitable that there would be a large development in what might be called industrial medicine. People would be studied chiefly in relation to their work and its environment, with the result that practice would diminish in the surgery and the home. This would involve an increase of clinics and hospitals, and the primary hospitals of the future would play an important part in every local community, where they would be closely associated with the work of the general practitioner.

BIOCHEMICAL SOCIETY.—At the meeting of this society, to be held in the Department of Biochemistry at Oxford, at 2.30 P.M. to-day, Saturday, July 10th, there will be biochemical demonstrations and a number of original communications will be read.

ANDOVER WAR MEMORIAL HOSPITAL.—On June 30th Field-Marshal Viscount Allenby opened the hospital erected as part of the war memorial at Andover, Hampshire. The building supersedes the old cottage hospital, and has been put up at a cost of £16,000. There is accommodation for 24 patients, and the capacity can easily be increased later, and there is also a well-equipped operating theatre. Dr. E. A. Farr, chairman of the hospital building committee, was able to announce that the hospital opened practically free of debt. An informal visit to the hospital was recently paid by the Prince of Wales.

THE KING AT PAPWORTH.—The King last week visited the Tuberculosis Colony at Papworth, near Cambridge, and before leaving, His Majesty told Dr. P. C. Varrier-Jones, the medical director, that the colony was "the most perfect scheme that he had ever seen." A tour of the industrial side of the colony to occupy an hour had been mapped out, but the King was so much interested in all that he saw, that he spent two hours in the works. He bought a large leather cabin trunk and was presented with a pigskin suit-case by the workers.

LARGER NORTHERN HOSPITALS.—Lord Darvngton has laid the foundation-stone of a new War Memorial Hospital at Darlington. The total cost will be £185,000, of which about one-third has yet to be raised.—Lady Sutherland has laid the foundation-stone of a new wing of the Beckett Hospital at Barnsley, which is estimated to cost £25,000, of which only one-half is vet available. The hospital has a waiting-list of 200, and the present accommodation is equivalent to no more than half a bed per 1000 of the population, which is growing rapidly.—The newly-completed wing of the Lloyd Hospital at Bridlington has been opened by Lady Cunliffe-Lister, the wife of the President of the Board of Trade. The hospital was established on a small scale in 1868 by Miss Lloyd, Sir P. Cunliffe-Lister's great-aunt. The new wing contains 20 beds in four wards.

KINGSTON DISTRICT NURSING ASSOCIATION.—The Minister of Health has addressed a letter to the Chairman of the Kingston District Nursing Association in regard to the cases of septic infection which have occurred recently among patients attended by nurses on the staff of this Association, and have been the subject of questions in Parliament. He states that the facts elicited by the inquiry indicate that there was grave laxity on the part of the superintendent in the administration of the maternity home and of the extern midwifery practice. She apparently failed to realise the risk of permitting the same nurse to have access to infected and non-infected patients, and she even allowed a nurse who was herself suffering from septic infection to remain on duty in spite of her manifest unfitness to continue to attend maternity patients. He adds that there can be little doubt that this nurse acted as a carrier of virulent infection from one patient to another and, although the ultimate responsibility for permitting this must devolve upon the superintendent, the nurse herself cannot be exonerated from blame. It is only fair to the superintendent to add, says the letter, that she suspected infection in a patient attended by this nurse, although the medical practitioner in charge of the case appears to have failed to diagnose the condition or to recognise the patient as a source of infection. The Minister considers that no useful purpose would be served by reviewing in detail the incidents of the outbreak, but he is compelled to recognise that the negligence of the staff has contributed in large measure to the calamities which were the occasion of this inquiry. Moreover, he cannot escape the impression that the medical care of more than one of the cases does not seem, as far as the evidence shows, to have been in accordance with the principles of sound midwifery practice. It is understood that the maternity home has been closed temporarily, and that the district midwifery practice is in abeyance for the time being. The Minister considers that the committee would be well advised, when maternity work is resumed, not only to replace the superintendent and the nurse directly concerned with the recent infected cases, but in view of the laxity in administration revealed by the inquiry to appoint an entirely new midwifery staff. He trusts that the committee will not be unduly discouraged by what has happened, and that the valuable public service rendered by the Association will not be allowed to lapse. He suggests, however, that it might be advisable for the committee to consider affiliation of their Association with the Surrey County Nursing Association.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, WEDNESDAY and THURSDAY, July 13th–15th.—ANÆSTHETICS: Visit of American and Canadian Anæsthetists. Tuesday, 10 A.M.: Papers by Prof. J. S. Haldane, Mr. T. P. Dunhill, and Dr. J. Blomfield. Thursday, 10 A.M.: American Session. DINNER: On Wednesday a Complimentary Dinner will be given by the Section of Anæsthetics to the visitors and their wives. Tickets, inclusive of wine, 25*s.* each.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, July 12th, to SATURDAY, July 17th.—Special demonstration in clinical surgery at the Royal National Orthopædic Hospital, 234, Great Portland-street, W., on Monday, at 2 P.M., by Mr. Rocyn-Jones. Special demonstration in clinical ophthalmology at the Royal Eye Hospital, Southwark, on Wednesday, at 3 P.M., by Mr. Griffith.—HOSPITAL FOR DISEASES OF THE SKIN, Blackiriars, S.E. Afternoon course in Dermatology consisting of instruction in the Out-Patient Department (selected cases by Mr. Haldin-Davis).—ROYAL EYE HOSPITAL, Southwark, S.E. A series of demonstrations on the diagnosis and treatment of Diseases of the Eye will be given by members of the staff from Monday to Friday, inclusive, at 3 P.M. Further information from the Secretary of the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, July 12th.—10 A.M., Surgical Out-patients: Mr. W. E. Tanner. 10.30 A.M., Gynæcological Operations: Mr. A. E. Giles: Throat, Nose, and Ear Operations: Mr. W. Ibbotson. 2 P.M., Medical, Surgical, and Gynæcological Clinics, Operations. 6.30 P.M., Venereal Department.
TUESDAY.—2 P.M., Medical, Surgical, Throat, Nose and Ear Clinics, Operations. 3 P.M., Demonstration of cases Illustrating Types of Mental Diseases: Dr. J. K. C. Laing at the Colney Hatch Mental Hospital, New Southgate, N.
WEDNESDAY.—10.30 A.M., Surgical Operations: Mr. E. Gillespie. 2 P.M., Medical, Eye, and Skin Clinics, Operations. 5.30 P.M., Venereal Department.
THURSDAY, July 1st.—10.30 A.M., Dental Out-patients: Mr. E. S. Pierrepont. 2 P.M., Medical, Surgical, and Throat, Nose and Ear Clinics, Operations. 5 P.M., Operations.
FRIDAY.—10.30 A.M., Eye Operations: Mr. N. Fleming. 2 P.M., Surgical, Medical, and Children Clinics. Operations. 3 P.M. Dr. L. R. Yealland: Method of Electro-Diagnosis. 6.30 P.M., Venereal Department.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, July 16th.—4 P.M., Mr. Archer Ryland: Demonstration of Museum Specimens.

CANCER HOSPITAL, Fulham-road, S.W.
WEDNESDAY, July 14th.—4.30 P.M., Dr. Archibald Leitch: Recent Advances in Cancer Research.
FRIDAY.—4.30 P.M., Dr. Stanley Wyard: Carcinoma of the Stomach.

THE LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, July 13th.—5 P.M., Dr. H. W. Barber: Alopecia Areata and Vitiligo.
THURSDAY.—5 P.M., Dr. A. M. H. Gray: The Sarcoids and Lupus Pernio.

Appointments.

BROWNE, F. J., M.D. Aberd., F.R.C.S. Edin., has been appointed to the Chair of Obstetric Medicine in the University of London.

Vacancies.

For further information refer to the advertisement columns.

Barnstaple, North Devon Infirmary.—H.S. £150.
Blackburn Union.—Res. Asst. M.O. £200.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. £150.
Cambridge, Addenbrooke's Hospital.—Cas. Officer. £130.
City of London Hospital for Diseases of the Heart, &c.—Two H. Phys. £100. each.
Durham County Council.—Asst. Welfare M.O. £600.
Essex Administrative County—Orthopædic Surgeon. £3 3*s.* per session.
Evelina Hospital for Children, Southwark.—House Surg. At rate of £120. Also Hon. Dental Surg.
Gloucestershire Royal Infirmary, Gloucester.—Asst. H.S. £150.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Res. M.O. £600. Also Pathologist. £750.
Ipswich County Borough.—Asst. M.O.H., &c. £600.
Manchester, Ancoats Hospital.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Manchester, St. Mary's Hospitals.—Two H.S.'s. Each at rate of £50.
Manchester University.—Lecturer in Experimental Physiology.
Maudsley Hospital, Denmark Hill, S.E.—Asst. M.O. £440.
Metropolitan Hospital, Fulham.—Tuber. Officer and Asst. M.O.H. £750.
Royal Northern Hospital, London, N.—Asst. Surg. O. £75.
Rotherham Hospital.—Jun. H.S. £150.
St. Albans and Mid Herts Hospital.—Res. O.M. £150.
St. Bartholomew's Hospital and Medical College.—Clinical Pathologist and Lecturer.
St. Helen's County Borough. Asst. M.O. £600. Also Asst. M.O.H. (Tuberculosis). £450.
St. Paul's Hospital for Skin Diseases.—Res. M.O. £250.
Seychelles Government.—Asst. M.O. R.6500 per annum.
Sheffield Royal Infirmary.—Ophth. H. Surg. and H.P. £80 each.
Staffordshire County Council.—Bacteriologist. £10 10*s.* per week.
Walthamstow, Wanstead, and Leyton Children's General Hospital. Res. H.S. £100.
West End Hospital for Nervous Diseases.—Hon. Phys. and Hon. Surg.
West London Hospital, Hammersmith-road, W.—Res. Asst. S. £200.
Wolverhampton and Staffordshire Hospital.—H.S. At rate of £150.

Births, Marriages, and Deaths.

BIRTHS.

BALL.—On June 29th, at Hampstead, the wife of Dr. Norman D. Ball, of a daughter.
CHAPMAN.—On June 29th, at Wingmore Lodge, Wokingham, Berks, the wife of Dr. E. F. Chapman, of a son.
FAWSSETT.—On July 1st, at Clarence House, Rhyl, North Wales, the wife of R. Shirley Fawssett, M.R.C.S., L.R.C.P., of a daughter.
GARDNER.—On July 3rd, at Old Steine, Brighton, the wife of Dr. T. Gardner, of a son.
REES.—On July 3rd, at the Quay House, Swanage, the wife of Dr. W. A. Rees, of a daughter.
RYAN.—On June 26th, at Welbeck-street, the wife of J. F. Ryan, M.B., of a daughter.

MARRIAGES.

COOK—STOWELL.—On July 1st, at Manchester Cathedral, the Rev. Frank Cook, M.A., Hiroshima, Japan, to Enid Florence Stowell, M.B., Ch.B., D.P.H., Abbey Hey.
ELLIS—DEANE.—On July 1st, at the Parish Church, Alverstoke, Lieut.-Colonel W. F. Ellis, O.B.E., late R.A.M.C., o Tangier, to Julia Grace Hawtrey, youngest daughter o he late Ralph Hawtrey Deane, of Eastcote, Middlesex, and Mrs. Hawtrey Deane, of Gerrards Cross.

DEATHS.

BROOKS.—On July 3rd, at his residence, Gold Hill, Chalfont St. Peter, Charles Brooks, M.R.C.S., L.R.C.P., J.P.
CASTLE.—On July 1st, suddenly, of heart failure, at Upper Berkeley-street, W., Walter F. R. Castle, D.S.C., M.D., M.R.C.P., in his 35th year.
EDWARDS.—On June 25th, at Cheltenham, George Frederick Edwards, M.D., late of Bexley, Kent, aged 74.
HOGG.—On July 4th, at his home, Ernest Henry Hogg, M.R.C.S., L.R.C.P., of Belmont House, Thrapstone, aged 51.
LAYCOCK.—On May 24th, at Melbourne, suddenly, George Lockwood Laycock, M.B., C.M.
MOIR.—On June 29th, at Ness bank, Inverness, John Munro Moir, M.D.
SMITH.—On June 30th, at St. John's-road, Putney, James Smith, M.A., M.B., M.D., F.R.C.S.
THOMSON.—On July 2nd, at Coates-crescent, Edinburgh, John Thomson, M.D., F.R.C.P.E., LL.D., F.R.C.P. (Hon.) Lond., aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

PUBLIC HEALTH IN CHINA AND THE BOXER INDEMNITY.

BY SURGEON-GENERAL S. H. CHUAN,
MINISTRY OF WAR, PEKING.

As gestures of goodwill, different nations in the past few years have either remitted to China, or decided to use for China's benefit, the unpaid portions of their Boxer Indemnity Funds. Such funds have been assigned to various worthy causes: The United States of America to education and culture; France to the stabilisation of finances; Holland to Yellow River conservancy; and Japan to library and research laboratory. It is needless to say that China deeply appreciates such generous deeds, and that funds so used will not only benefit China and the nations concerned, but will also result in advancing further the cause of international peace and brotherhood.

Remission or Allocation of Indemnity.

It augurs well for the future international relations in the Far East to know that Great Britain has recently decided also to take similar action regarding the balance of her Boxer Indemnity. It is significant to note that so much importance is placed on the best use of the funds that a commission, headed by such a distinguished statesman as Viscount Willingdon, and assisted by British and Chinese possessing the confidence of this country, has been studying the local needs and conditions, gathering at first hand all necessary information which will enable the Statutory Committee to render its final decision on "the best use of the indemnity funds for the mutual interests" of Great Britain and China.

During the past year more than a few proposals have been made either to the British Government or to the Willingdon Delegation, concerning the allocation of the British Boxer Indemnity. There is no doubt that all these proposals have been made by parties bearing in mind only the needs and welfare of China, and that they are all worthy of careful and favourable consideration. It is, therefore, with due respect for, and full appreciation of, the value of the other proposals that I wish to write a few lines in favour of the proposal suggesting the allocation of at least a part of the British Boxer Indemnity Funds to the promotion of public health in China.

It seems to me that in deciding on the best use of the said funds, these factors should be of primary importance:—the need of the country, the range of benefit that the proposal will yield, its feasibility and permanency, and the remitting nation's fitness in promoting the consequent scheme.

China's Crying Needs.

China certainly has many needs. But all will readily agree that the lack of an adequate and efficient public health service is one of the crying needs, if not *the* crying need, of China to-day. One does not have to go far in order to be convinced of this; the health of the people, the general sanitary conditions, the high infantile mortality, and the recurring epidemics are sufficient to prove to the Chinese themselves how dire the need is. It is true that health conditions in the different foreign concessions are much better, and that Western missionaries have helped to initiate certain needed sanitary reforms in and around their stations. During recent years the Chinese Government has also undertaken to improve the living conditions in the large cities. But these efforts, worthy as they are and made under such unfavourable conditions, amount to almost nothing when we take into consideration the vastness of the country and its tremendous population. The need still remains great.

Indemnity funds used in the promotion of public health will not only meet the crying need in China, but will also affect the greatest number of people. Improved health conditions in China do not affect the Chinese alone, although the Chinese form one-fifth of the world's population. Besides the Chinese, there are also thousands of foreigners residing in various parts of the country whose lives and properties will certainly receive the full benefit. Foreign trade in the country will be stimulated, which means more foreign population in China. Moreover, the backwardness of China's health conditions has often been the cause of her sons and daughters being unwelcome to foreign countries, sometimes leading to unpleasant international relations and regulations. The periodic epidemics have frequently and seriously affected trade coming into and going out of the country on account of the quarantine regulations. Better health conditions in China will, therefore, benefit the whole world in more ways than one.

The feasibility of the few major proposals have often been questioned. Many doubt if those proposals are capable of being carried out and, if carried out, no one can guarantee that they would not be misused by the politicians and militarists who are and will be dominating this country for some years to come. Then it will simply mean the creation of more troubles for the people, plunging the country into deeper misery. The work of promoting public health is, however, primarily humanitarian in nature. The work can easily be organised in such a way and with such a personnel that political and military interference can be avoided. Certainly, public health promotion, thus organised and conducted, can never be used by politicians and militarists as a weapon to injure the people and the country. Under the present abnormal conditions in China, which are sure to continue for some time, this proposal does seem to be the most feasible.

Permanency of any proposal should certainly be one of the deciding factors. The funds available are limited in amount and cannot form a perpetual source of income. If not judiciously used, they may soon be exhausted, rendering it impossible to continue the work, whatever it may be. Should it come to that, this would be quite a calamity indeed. However, in promoting public health measures in China, the work can be so carried on that its permanency will be assured. For example, part of the money might go to defray the expenses in training the necessary personnel in the medical schools of good standing in this country; part of it might go into the expenditure of general administrative purposes; part of it might be spent in the actual work of promotion, such as the giving of public health demonstrations, work of research, and subsidies and loans to those agencies, either Government or private, whose efforts along the line of public health deserve help and encouragement; and last, but not least, an adequate part of the fund could be reserved as a sinking fund, which would enable the work to go on indefinitely.

A Public Health Ministry.

As to Great Britain's fitness in promoting public health in China, none will question her qualifications. She is the pioneer in placing public health definitely on a governmental basis by the establishment of a Ministry of Public Health. Her efforts and experiences in improving living conditions in her several colonies make her an expert along these lines. Her medical representatives in China in the past half a century have always taken a prominent part in helping China to solve her health problems. With her wide experience and deep interest in the work of public health, it is only fitting, yea even imperative, for her to assist China in instituting a modern and efficient public health service. And Great Britain is pre-eminently fitted to do it.

In these days of agitation against British imperialism, boycott against British goods, and popular outcry against "the British domination," it is most urgent for Great Britain to do something to show unequivocally to the Chinese her true spirit of the Samaritan. The best way, it seems, is for her to take a prominent and active part in promoting public health in China. As already indicated, the work of public health is primarily humanitarian in nature. It aims at the relieving of the sufferings of the people which cannot fail to touch the hearts and win the goodwill of the masses. Once the people's heart is won, all material benefits from trade, business, industries, and what not will naturally come to her.

If we come to consider the sources from which the Boxer Indemnities are collected, it is almost obligatory for the authorities concerned to use the funds in such a way that the resulting benefits will spread all over the country. No plan can be justifiable if its benefit is restricted to only a small area of the country, and if only a small proportion of population are directly affected. For it is the entire population of China who are the contributors to the Boxer Indemnity chest, not a particular section nor a portion of the population of the country. It is true that a well-planned scheme, properly carried out, will eventually benefit indirectly the whole country. Since all Chinese are contributors to the Boxer Indemnity Funds, such funds, when remitted to China, ought to be used in such a way that it will affect the whole country directly and as soon as possible. The promotion of public health in China is precisely the plan that has already been pointed out in the foregoing paragraphs

Finally, it may not sound too exaggerated to say that, of all the professions, the medical profession, by the very nature of its training and work, contains the least number of men whose aim of life is purely for personal gains. So much can certainly be said about the properly trained modern medical man in China whose technical training and personal character is uniformly high. Given for the purpose of promoting public health in China and entrusted to such a body of men, both Chinese and foreign, there is no doubt that every penny of the funds will be well spent, and that the work to be established will be honestly and efficiently carried on.

Mutual Benefit.

In conclusion, one important phase of this problem in spending the funds, which has already been pointed out by different authorities and leading papers, may be considered. The word "mutual," contained in the resolution of the British Government concerning the use of her Boxer Indemnity may give the impression that, after all, the funds are to be spent mainly for the British interests in China, which evidently is not the sole motive that prompted the British Government to perform such an unselfish deed to China. In the final decision on how the funds are to be used, we may with all true friends of Britain reasonably hope, that not only the words will show Britain's real unselfish spirit behind the act, but that the nature of the controlling personnel and organisation will also prove to all that the funds are to be spent for and by the Chinese with expert British advice and support only. Funds so used and controlled, although entirely for China's benefit, will, as already pointed out, inevitably result in Britain's benefit, too. So, let it be a free gift to the recipient, and let whatever fall to the giver come as a matter of course.

Viewed, then, from all angles the allocation of at least a portion of the British Boxer Indemnity for the promotion of public health in China is the best, wisest, and most feasible way for Great Britain to render an everlasting service to China in the latter's days of trial and turmoil. The leading medical associations have jointly made such a proposal to Lord Willingdon's Commission. Following that, they have presented to the same delegation a tentative plan, and later on a detailed plan, embodying all phases for the carrying out of their proposal. All these go to show that members, both foreign and Chinese, of those associations are public spirited, serious-minded, and thoroughly earnest. Let us sincerely hope that a proposal of so much value, supported by such enthusiastic spirit and united effort, will have the primary claim on the attention of the Statutory Committee, before the final decision is reached.

ROWLAND HILL AND VACCINATION.

Christ Church, Westminster Bridge-road, which celebrated its jubilee from July 4th–6th, is a perpetuation of the work of the Rev. Rowland Hill at the famous Surrey Chapel in Blackfriars-road, where for 50 years he drew crowded congregations of all classes. Amongst Hill's many interests was vaccination, and he was a staunch friend of Dr. Jenner. Frequently after his sermon—and he is said to have preached 23,000 of them—he would say, "I am ready to vaccinate to-morrow morning as many children as you choose; if you wish them to escape that horrid disease, small-pox, you will bring them." At the Old Surrey Chapel he established what would to-day be called a vaccination clinic, and he must have vaccinated 10,000 people.

Hill was buried under the pulpit at Surrey Chapel, but when, under Dr. Newman Hall, the congregation moved to Christ Church 50 years ago, his body was removed to the new church by special permission. It still lies under the old pulpit that stands to-day beneath the Lincoln Tower. This tower, largely built with American money, commemorates Dr. Newman Hall's championship of the North during the American Civil War. Christ Church, Westminster Bridge-road, is also associated with David Livingstone, who was a friend of Hall's, and a vestry is named after him, which contains, besides Rowland Hill's relics, two cases of Central African insects presented to the church by Livingstone.

GUARDIANSHIP SOCIETY.

THIS society, which has its headquarters at Brighton, arranges for the care of the subnormal in body or mind, and boards out suitable cases under supervision and guardianship. It has been in existence for 13 years. During 1925 514 cases were dealt with, which was an increase of 23 per cent., and the expenditure was £13,482, as against £10,417 in 1924. There has been an increase of 100 per cent. over the previous year in the number of patients received on licence from certified institutions. The society continues to do good work at its cottage farm at Dungates, Horeham Road, and at Beadles Cottage, Cowbeach, both in Sussex, and in coöperation with the Brighton Corporation and the Mental Hospital it has now formed a mental after-care committee.

AN ARMY SANITATION HANDBOOK.

"SANITARY measures must be, firstly, *understood;* secondly, *believed in;* thirdly, *practised* by every officer, non-commissioned officer and man." These are the fundamental principles of the "Army Manual of Sanitation"[1] which is designed to explain sanitation, and especially army sanitation, to regimental officers and men, as it very well does. The soldier's health is good unless it is upset, and so the handbook tells him what to avoid, and in detail what arrangements the army makes to help him to keep down flies, to get clean water and food, to breathe pure air, and to avoid infection. It also tells him what will happen if he neglects its instructions, putting prominently before him its plea for the persistent personal practice of prophylactic precautions, and assuring him that if he and his mates get ill, it will be largely through their own carelessness. Moderate tobacco smoking is described as probably beneficial, and alcohol, "though not a necessity," is not condemned. The remarks on disease vectors are excellent, but surely the fact that lice are "now" known to carry disease has not made personal cleanliness more important "than it was formerly," but only more important than it was formerly thought. This book is very good and very cheap; laymen could read it with pleasure and profit.

[1] London: H.M. Stationery Office. 1926. Pp. 134. 6*d.*

EXPERIMENTAL OPOTHERAPY IN FOWLS.

IN the *Semana Medica* (April 22nd, 1926) Dr. Pablo Heredia describes some experiments in which he fed healthy male chickens on varying quantities of bovine testicular extract and observed the effect on growth and the development of secondary sexual characters.

The chickens were taken in pairs, one in each pair being a control, and the birds were as nearly alike as possible, each pair being taken from the same brood. The results were the same in all cases. The untreated bird developed better than the other, and on post-mortem examination the testicles of the birds fed with extract showed some congestion and degeneration of cells, the results being roughly in proportion to the amount given.

The author concludes that so far as these experiments go, they show (1) that opotherapy is incapable of exciting glandular action, (2) that it supplements the function of the gland treated, (3) that it inhibits the glandular secretion when its action is prolonged and may produce glandular atrophy. Possibly it has some toxic action. He admits that these conclusions are only provisional, and that much more work is needed to make them certain; in any case they only relate to the effects observed on glands that are primarily healthy and in the developing stage, and have no bearing on morbid conditions. They do, however, suggest that testicular extract from one animal has a specific effect on the testes of another and on the secondary processes connected with them, and it is interesting that this should be true when the animals are so distantly related as bulls to chickens.

THE CANTAB IN 1826.[1]

IT has occurred to Mr. Teichman that, owing to the great social changes which have taken place in the life of the undergraduate at Cambridge during the past 100 years, some account of that young man in the 'twenties would be interesting. He has, therefore, compiled a modest little book illustrating mainly the sporting side of undergraduate life, but including interesting chapters on other phases. A small bibliography shows the principal sources of the compilation, and explains also a feeling which many Cambridge men will have on reading the book—namely, that the revolution in manners and outlook has occurred largely at the end of the century under consideration. For, allowing for minor differences, much that is described as occurring 100 years ago also occurred 50 and even 40 years ago; the episodes were not identical, but the spirit behind them had persisted and the traditions, leading to the similar occurrences, were going strong. This can be recognised in the amusing chapters entitled "The Boating Man," and "The Sporting Man." At the same time it can be seen that the nature of the fast man's excesses had changed considerably between Georgian and mid-Victorian times, in sympathy with improved standards of conduct and an alteration for the better in social opinions. This evolution rather than revolution of manners comes out the more clearly because the author, as he acknowledges, while professing in his title to deal with Cambridge 100 years ago, has been lured forward into the 'forties by some of the literature which he has consulted. The chapter entitled "Town and Gown" is not descriptive of anything that has been seen for more than 50 years, but readers of *Verdant Green*, whose adventures took place at Oxford, will recognise that at one time there was a real feud between the university undergraduates and a certain type of citizen, boasting Rogue Riderhood's appellation of "waterside character." We doubt if any one alive can recollect the existence of this feud as having any real basis, though traces of it could be found 40 years ago, while sentiments exactly opposite now prevail between townsmen and gownsmen.

[1] The Cambridge Undergraduate 100 Years Ago. Compiled with extracts and illustrations from contemporary sources. By Oskar Teichman, D.S.O., M.C., M.A. Cambridge: W. Heffer and Sons. 1926. Pp. 108.